220

WA785
1899
M26m

23497

LIST OF DIAGRAMS AND PLANS ACCOMPANYING EXPERT'S REPORT.

DIAGRAM 1 Experimental Filters.

2 Diagram Connections.

3 Plan of Septic Tanks.

PHOTOGRAPH 1 Bacteria Beds A and B.

2 Septic Installation.

DIAGRAM 4 1898, Oxygen, 4 hours Double Filtration.

5 1899 „ „ „ „

6 „ „ „ Weekly Averages.

7 1898, Albuminoid Ammonia Double Filtration.

8 1899, „ „ „ „

9 „ „ „ Weekly Averages.

10 1898, Incubator Test Double Filtration.

11 1899, „ „ „ Sewage.

12 „ „ „ „ Final Filter.

13 {Septic Tank Effluent / Average Filter „} Septic System.

14 Septic System, Oxygen and Albuminoid Ammonia.

15 1898, Single Filtration, Oxygen 4 hours, Weekly Averages of Daily Analysis.

16 „ „ Alb. Amm. „

17 „ „ Incubator Test „

18 1899, Single Filtration, Oxygen 4 hours and Albuminoid Ammonia, Weekly Averages.

19 Single Filtration, 1899, Incubator Test.

20 Storm Diagram.

21 Incubator Test Double Filtration, 1899, Special Samples.

22 Ship Canal Mixtures.

23 Week[illegible]

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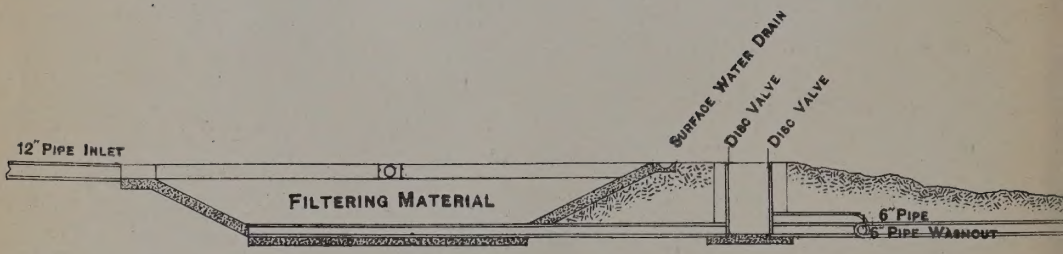
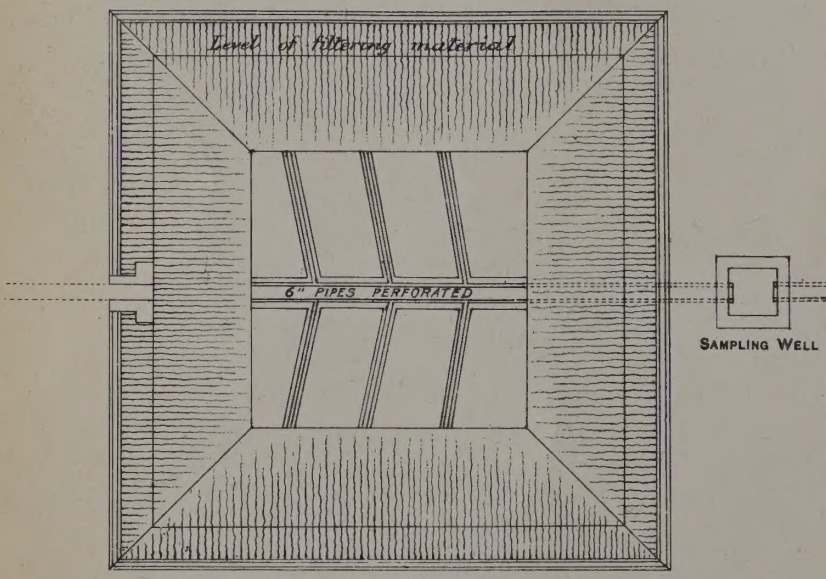
MANCHESTER C

EXPERIMENTA



HIGH LEVEL FILTER

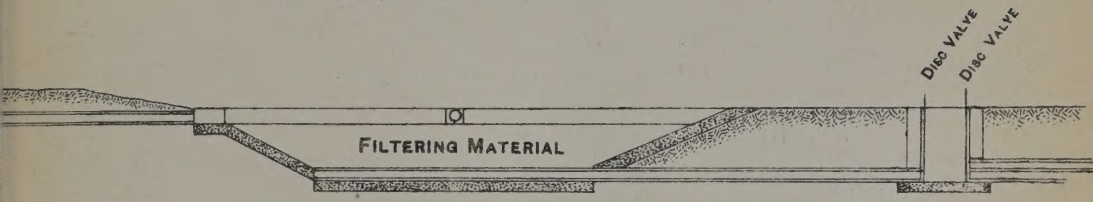


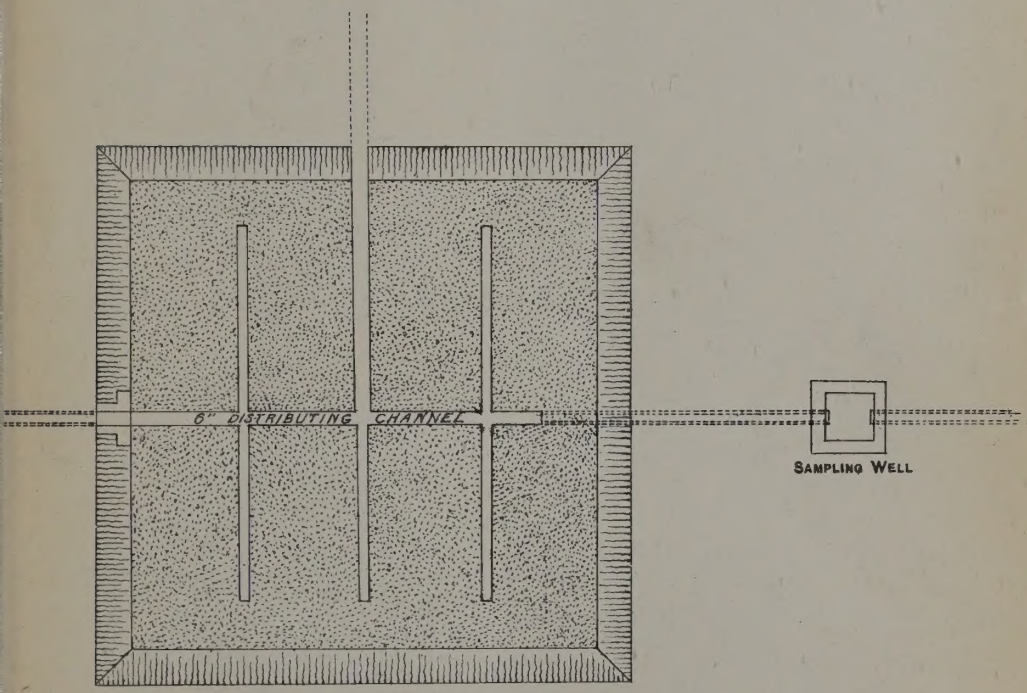
Plan without filtering material

DIAGRAM 1

)RPORATION
FILTERS

LOW LEVEL FILTER





Plan shewing filtering material

2

EXPERIMENTAL

Diagram shewing positio

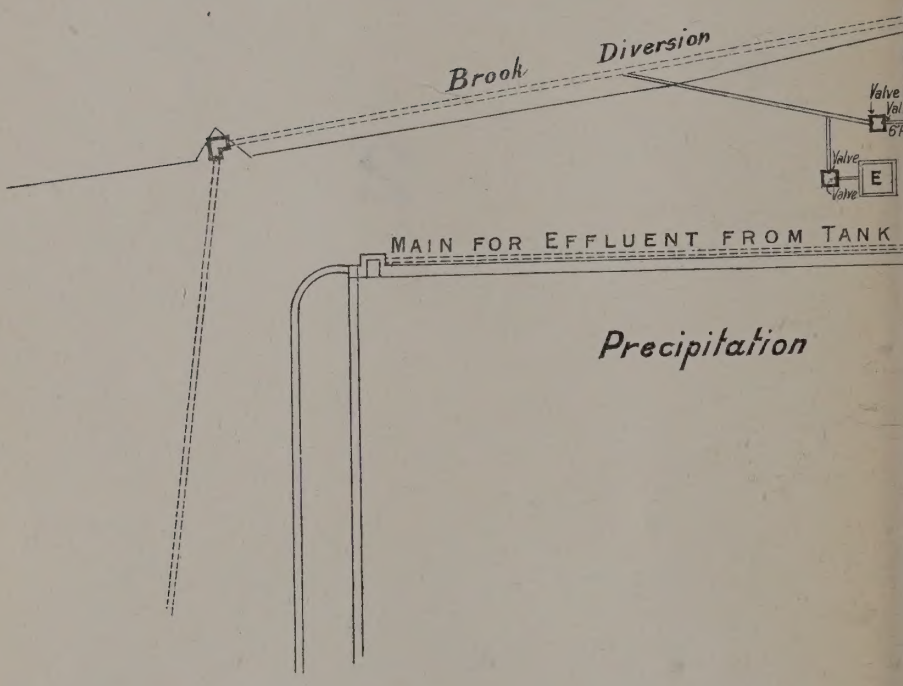
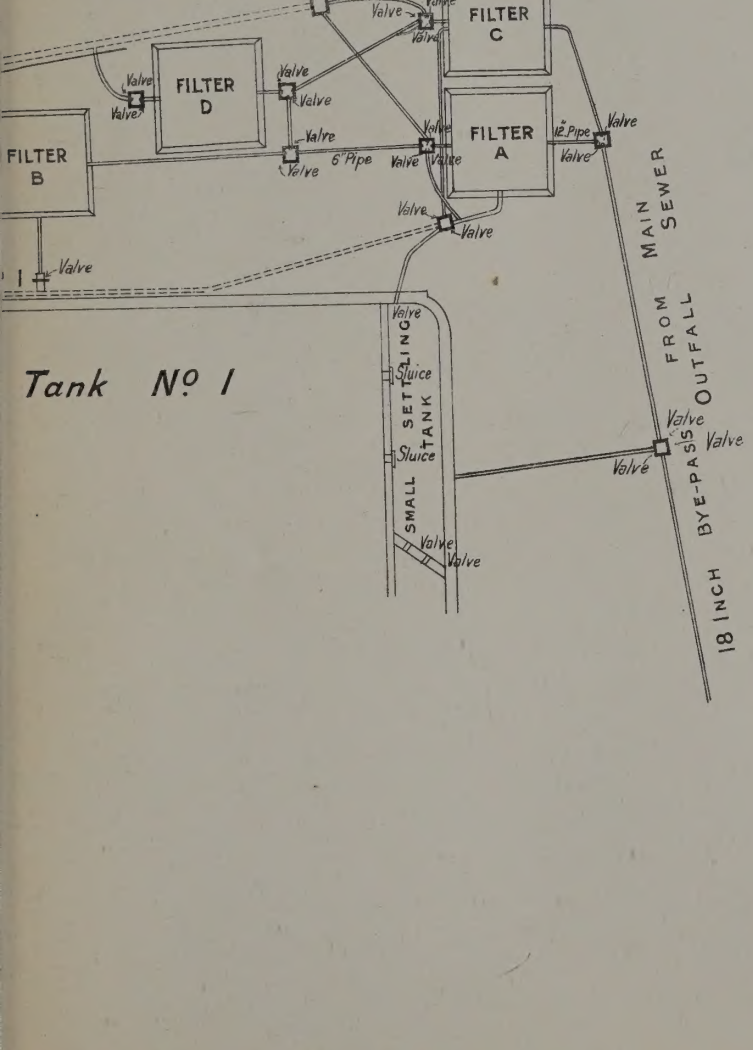


DIAGRAM 2

FILTERS.

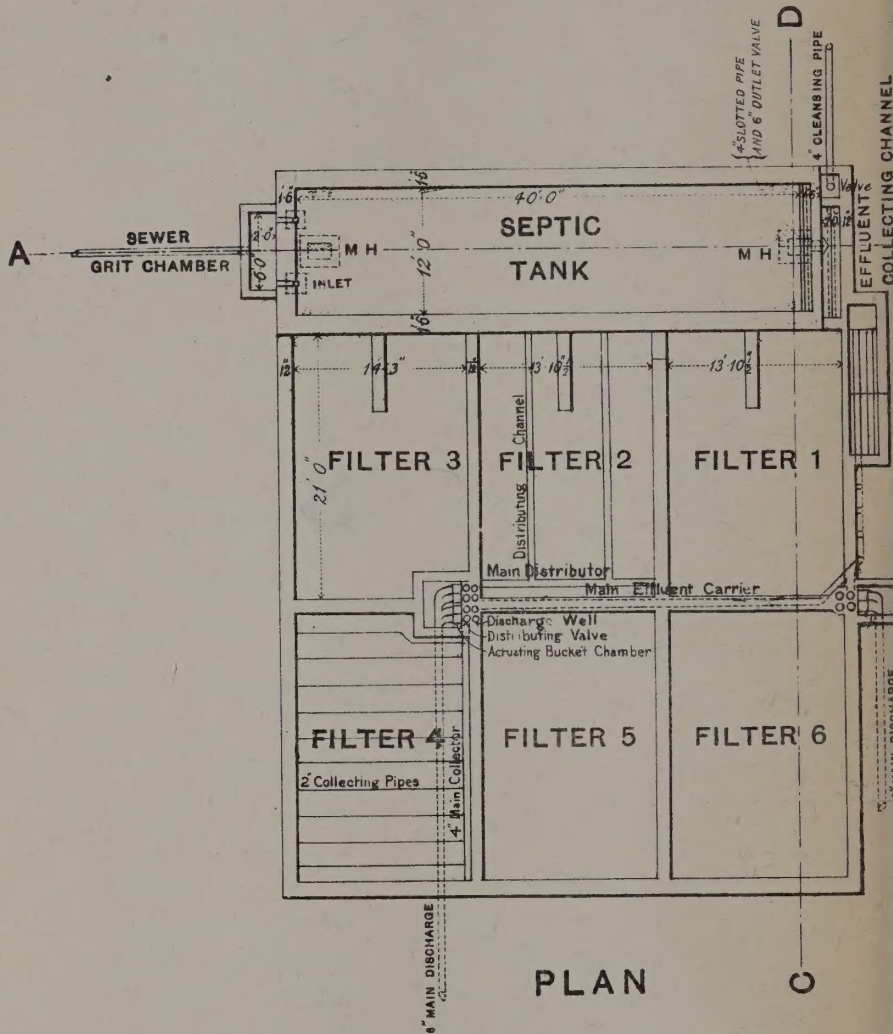
of Connections.

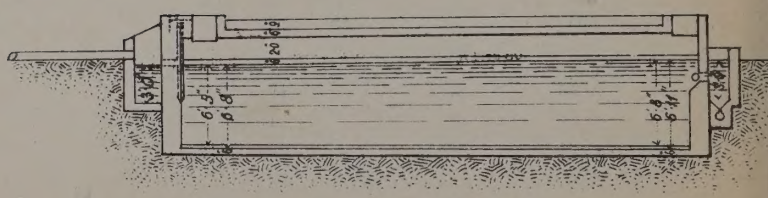


3

THE SEPTIC TANK SYSTEM OF SEW

MANCHESTER EXPERIMENTAL





SECTION AB

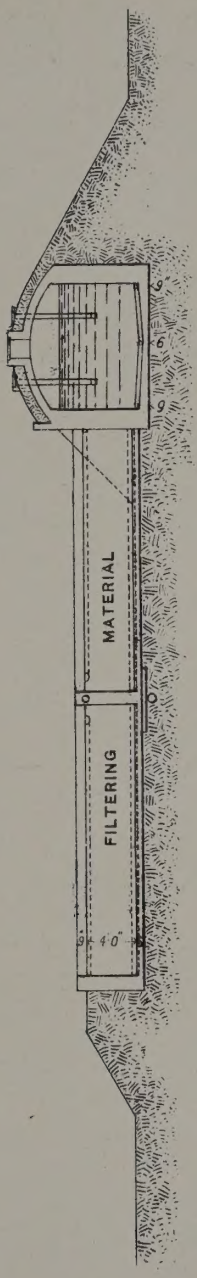
DIAGRAM 3

...GE TREATMENT (Patent)

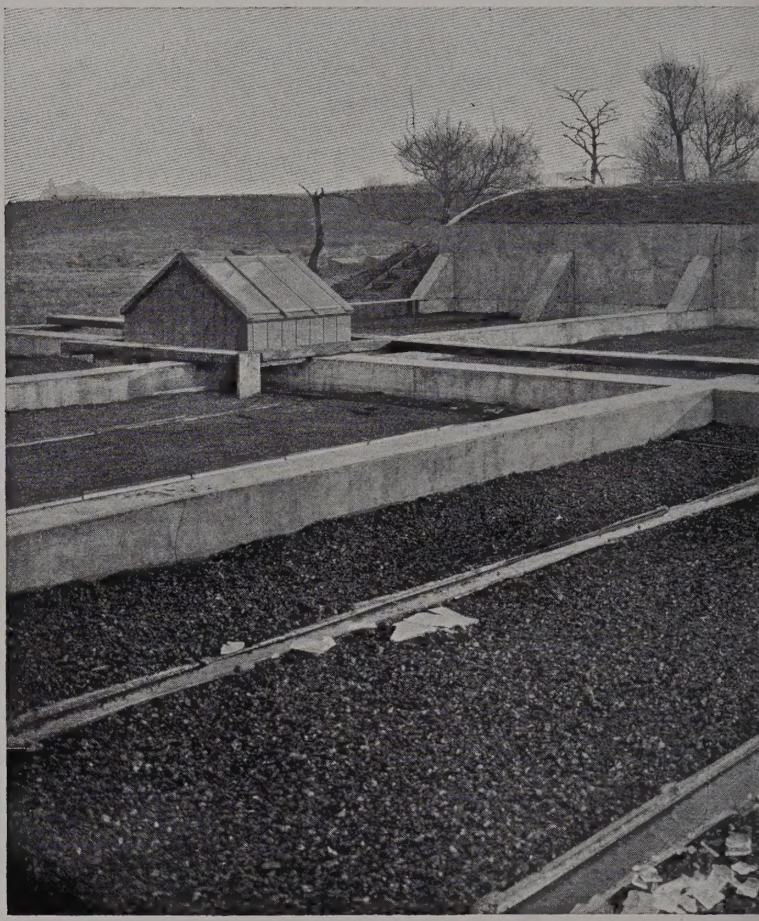
...NSTALLATION.

— B

...IGE CHAMBER

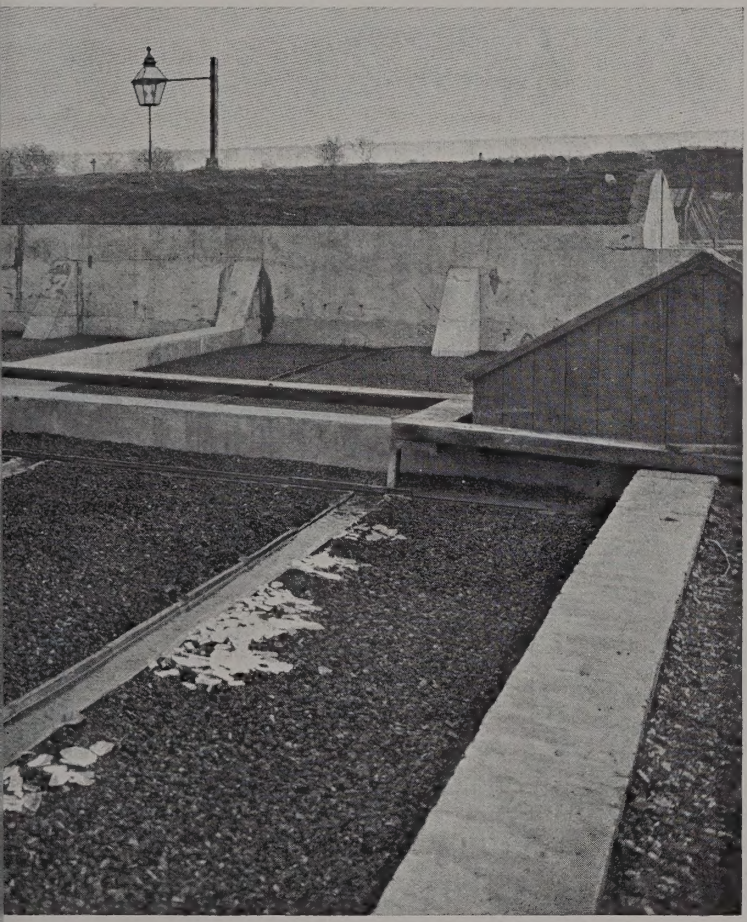


SECTION CD



VIEW SHEWING SI

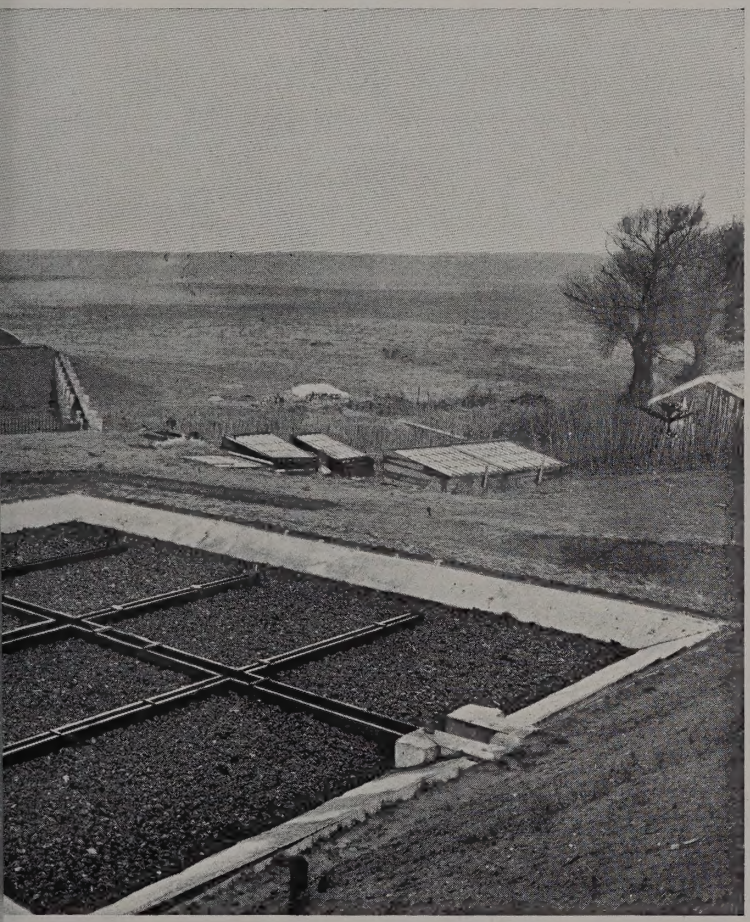
Photograph 2.



IC INSTALLATION.

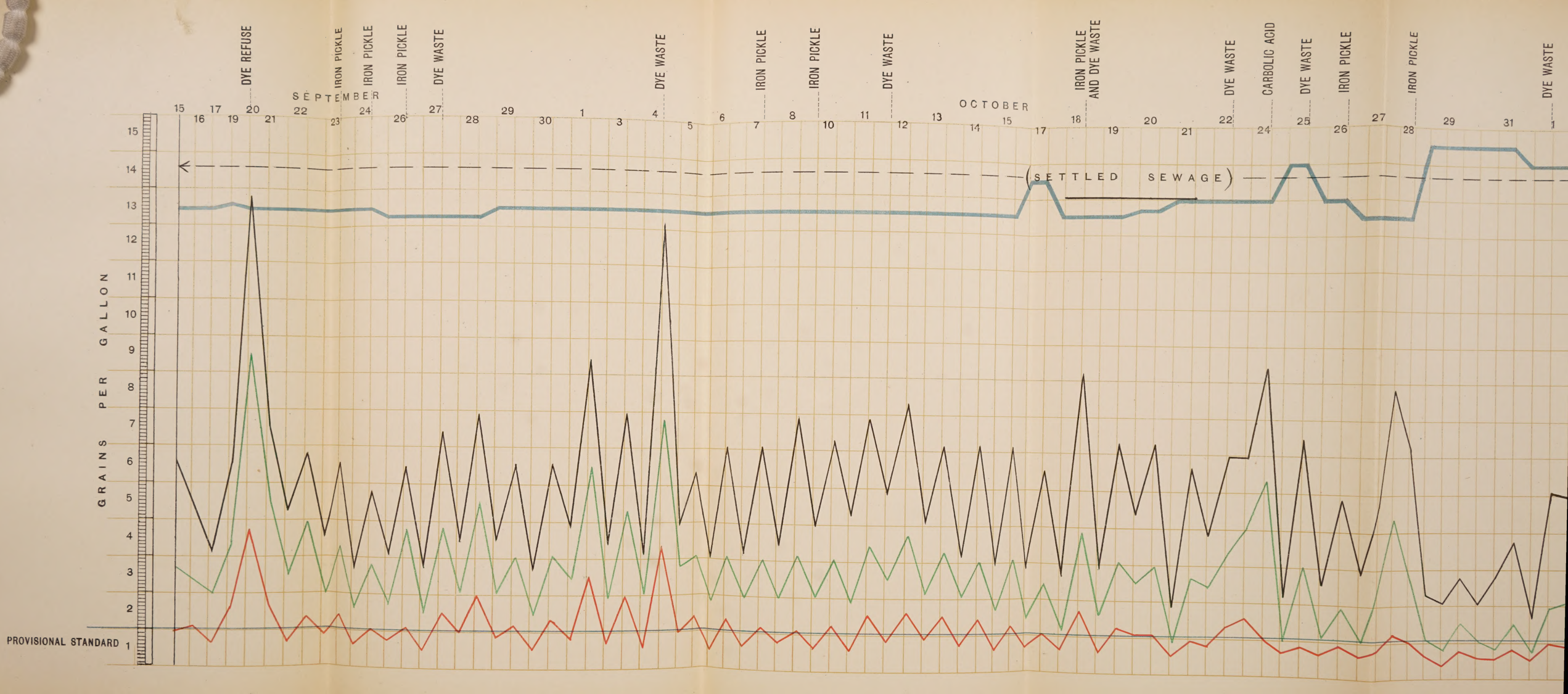
GENERAL VIEW SHEWING

Photograph 1.



ACTERIA BEDS A AND B.

4


DYE REFUSE
IRON PICKLE
IRON PICKLE
IRON PICKLE
DYE WASTE
DYE WASTE
IRON PICKLE
IRON PICKLE
DYE WASTE
IRON PICKLE AND DYE WASTE
DYE WASTE
CARBOLIC ACID
DYE WASTE
IRON PICKLE
IRON PICKLE
DYE WASTE
SEPTEMBER
OCTOBER
15 16 17 19 20 21 22 23 24 26 27 28 29 30 1 3 4 5 6 7 8 10 11 12 13 14 15 17 18 19 20 21 22 24 25 26 27 28 29 31 1
(SETTLED SEWAGE)
GRAINS PER GALLON
15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
PROVISIONAL STANDARD

1898.

DOUBLE FILTRATION.

OXYGEN ABSORBED, 4 HOURS.

DAILY ANALYSES.

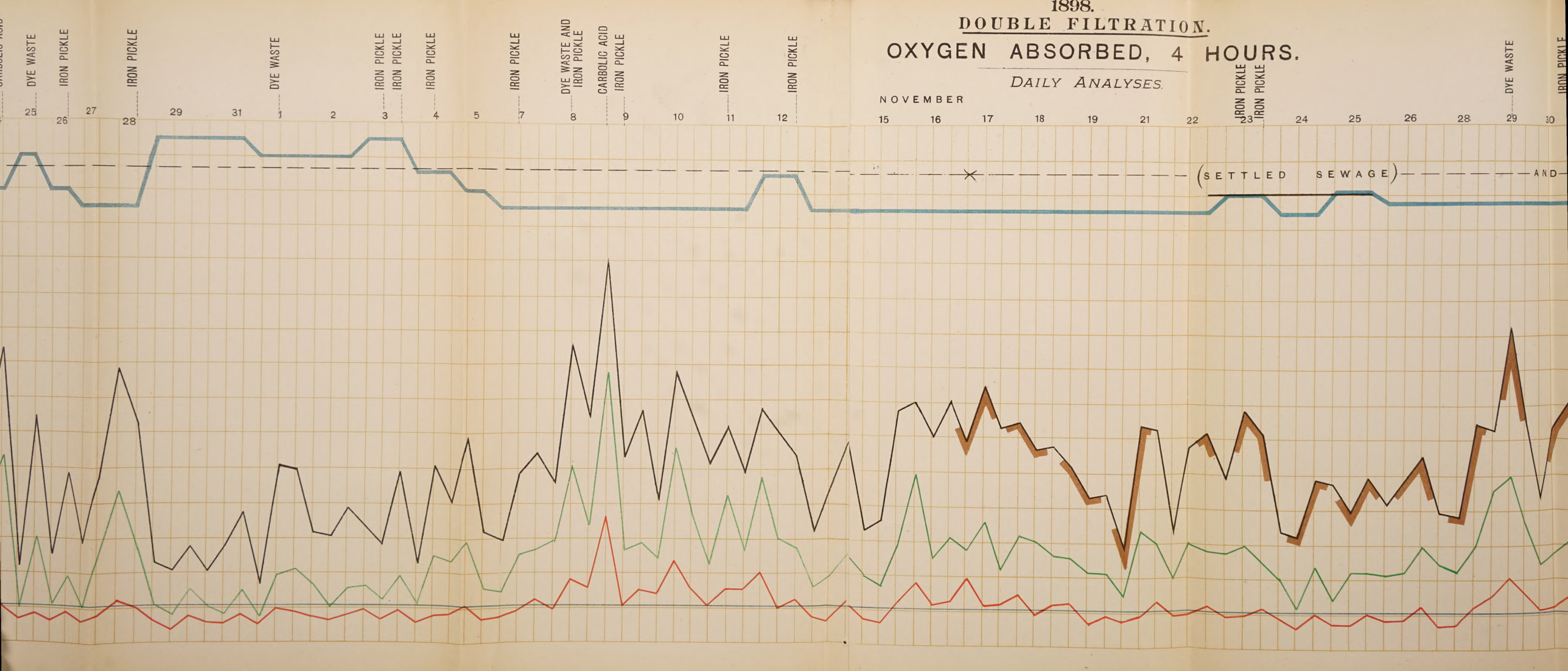
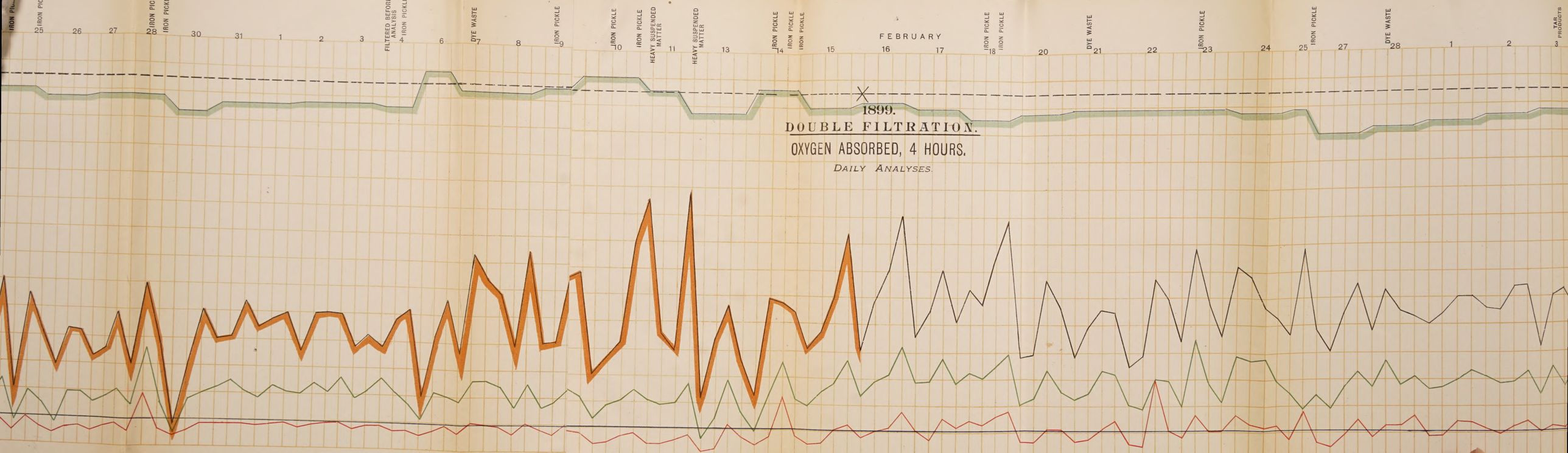


DIAGRAM 4

Line representing daily flow of Sewage shewn thus ———

5

DECEMBER
29
30
31
2
3
4
5
6
7
9
10
11
12
13
14
16
17
18
20
21
23
24
25
26
27
28
30
31
1
JANUARY
ACID REFUSE
ACID REFUSE
ACID REFUSE
IRON PICKLE
IRON PICKLE
HEAVY SUSPENDED MATTER
IRON PICKLE
HEAVY SUSPENDED MATTER
IRON PICKLE
DYE REFUSE
TO FILTERED SAMPLES OWING TO SUSPENDED MATTER
IRON PICKLE
IRON PICKLE
IRON PICKLE
IRON PICKLE
GRAINS PER GALLON
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
RAW SEWAGE
COARSE FILTER "A"
PROVISIONAL STANDARD
FINAL FILTER "B"


IRON PICKLE
25 26 27 28
IRON PICKLE
30 31 1 2 3
FILTERED BEFORE ANALYSIS
IRON PICKLE
6
DYE WASTE
7 8
IRON PICKLE
9
IRON PICKLE
10
IRON PICKLE
HEAVY SUSPENDED MATTER
11
HEAVY SUSPENDED MATTER
13
IRON PICKLE
14
IRON PICKLE
IRON PICKLE
15
FEBRUARY
16 17
IRON PICKLE
IRON PICKLE
18 20
DYE WASTE
21 22
IRON PICKLE
23 24
IRON PICKLE
25 27
DYE WASTE
28 1 2 3
TAR PRODUCTS
1899.
DOUBLE FILTRATION.
OXYGEN ABSORBED, 4 HOURS.
DAILY ANALYSES.

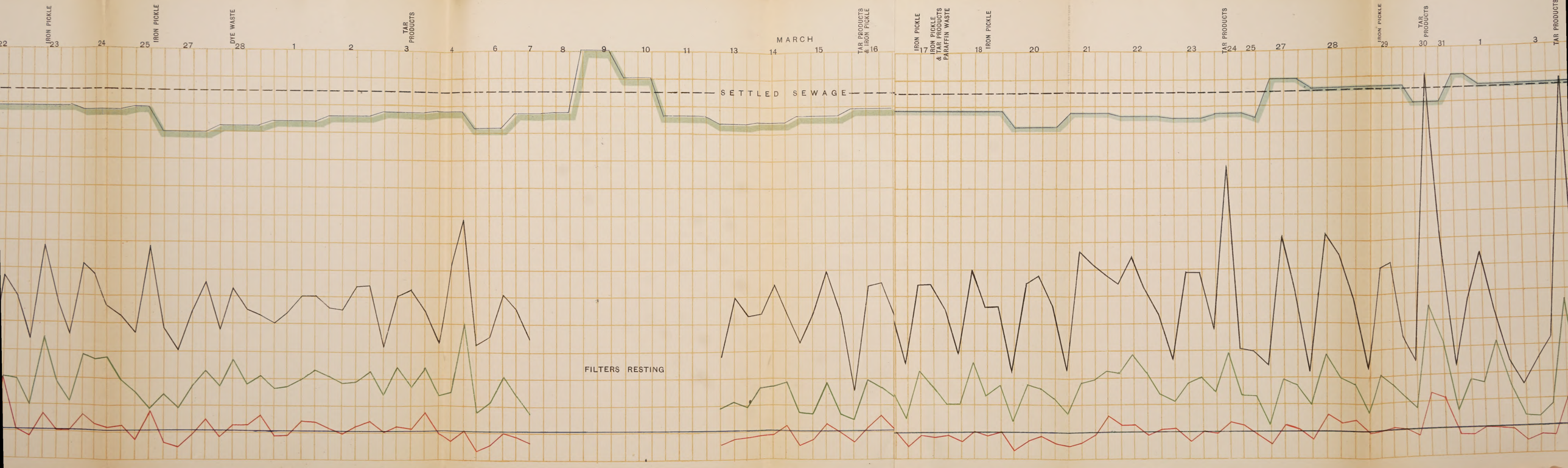
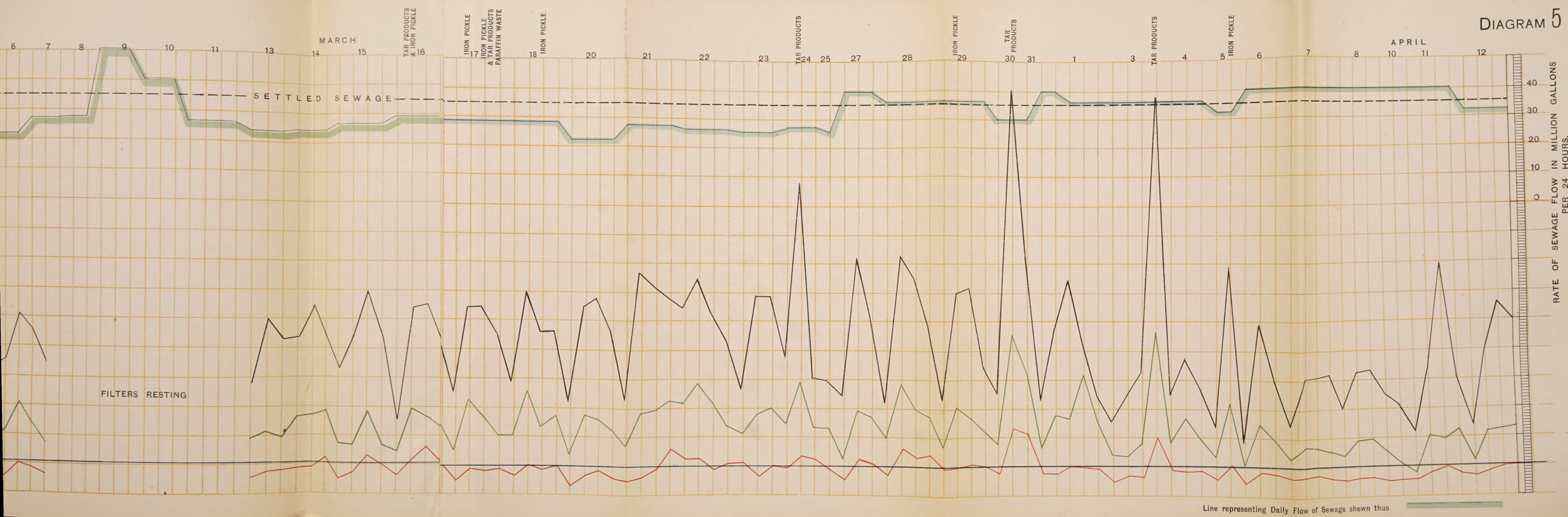
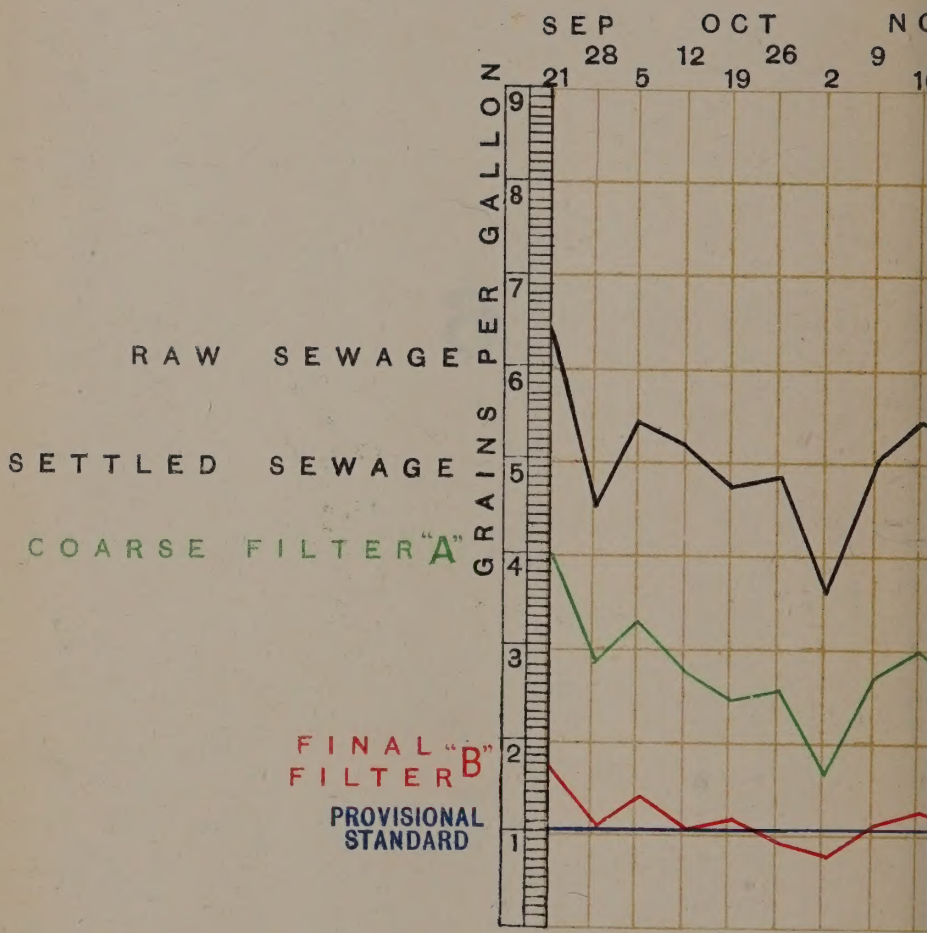

IRON PICKLE
IRON PICKLE
DYE WASTE
TAR PRODUCTS
TAR PRODUCTS & IRON PICKLE
IRON PICKLE
IRON PICKLE & TAR PRODUCTS PARAFFIN WASTE
IRON PICKLE
TAR PRODUCTS
IRON PICKLE
TAR PRODUCTS
TAR PRODUCTS
22 23 24 25 27 28 1 2 3 4 6 7 8 9 10 11 13 14 15 16 17 18 20 21 22 23 24 25 27 28 29 30 31 1 3
MARCH
SETTLED SEWAGE
FILTERS RESTING

DIAGRAM 5

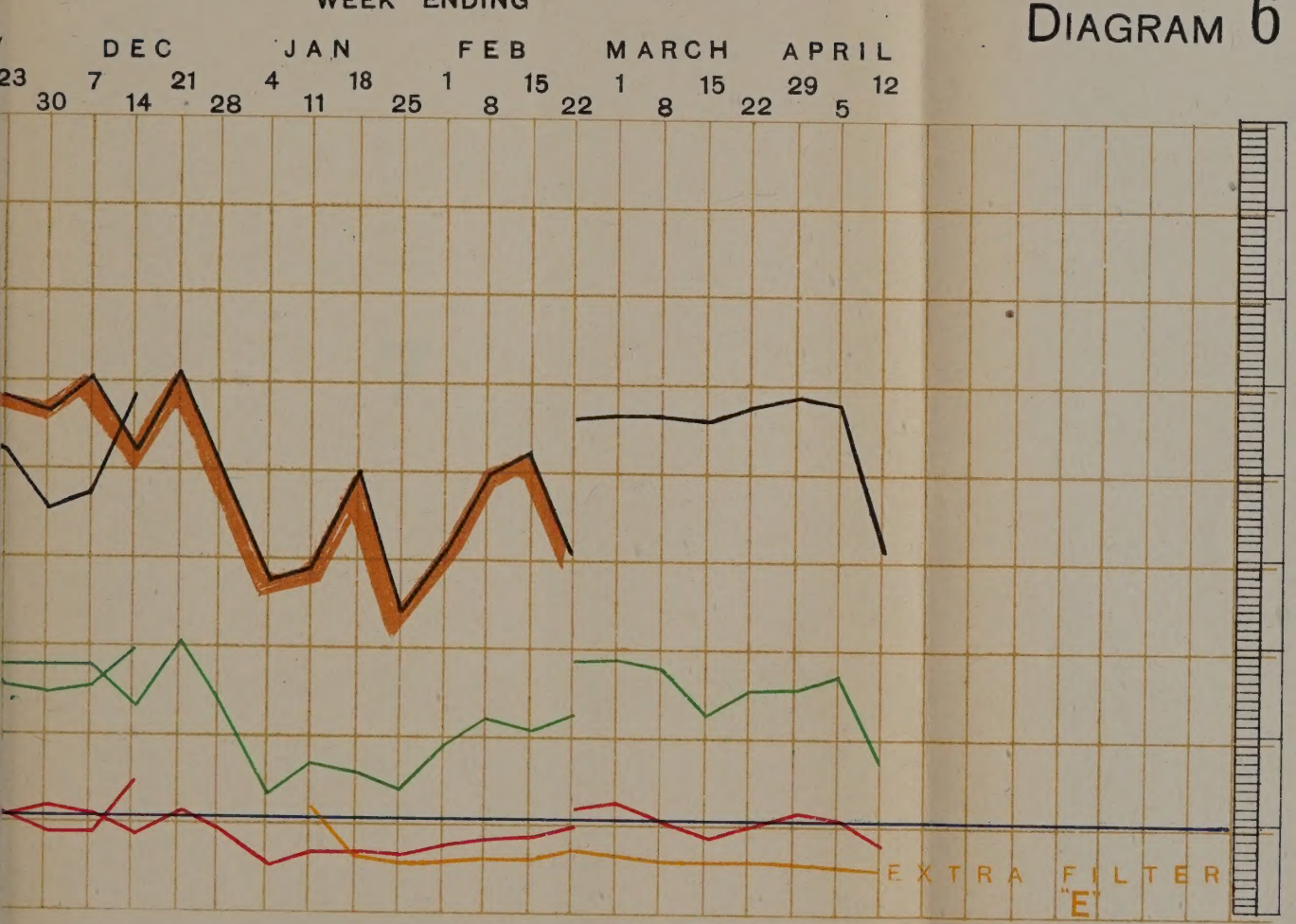

MARCH
APRIL
6 7 8 9 10 11 13 14 15 16 17 18 20 21 22 23 24 25 27 28 29 30 31 1 3 4 5 6 7 8 10 11 12
TAR PRODUCTS & IRON PICKLE
IRON PICKLE
IRON PICKLE & TAR PRODUCTS & PARAFFIN WASTE
IRON PICKLE
TAR PRODUCTS
IRON PICKLE
TAR PRODUCTS
TAR PRODUCTS
IRON PICKLE
SETTLED SEWAGE
FILTERS RESTING
RATE OF SEWAGE FLOW IN MILLION GALLONS PER 24 HOURS.
40
30
20
10
0
Line representing Daily Flow of Sewage shewn thus


SEP
OCT
28
12
26
21
5
19
2
GRAINS PER GALLON
9
8
7
6
5
4
3
2
1
RAW SEWAGE
SETTLED SEWAGE
COARSE FILTER "A"
FINAL "B" FILTER
PROVISIONAL STANDARD

WEEKLY AVERAGES OF

OXYGEN ABSORBED, 4 HOURS.

DIAGRAM 6



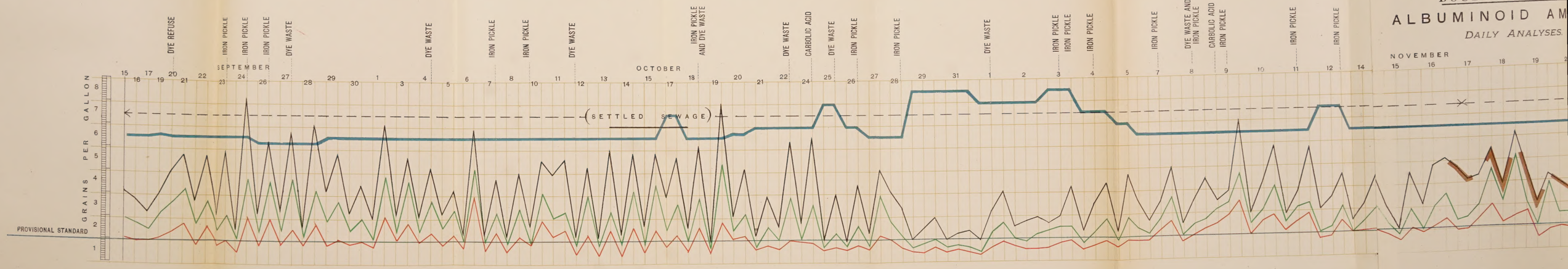
7

1898.

DOUBLE FILTRA

ALBUMINOID AM

Daily Analyses



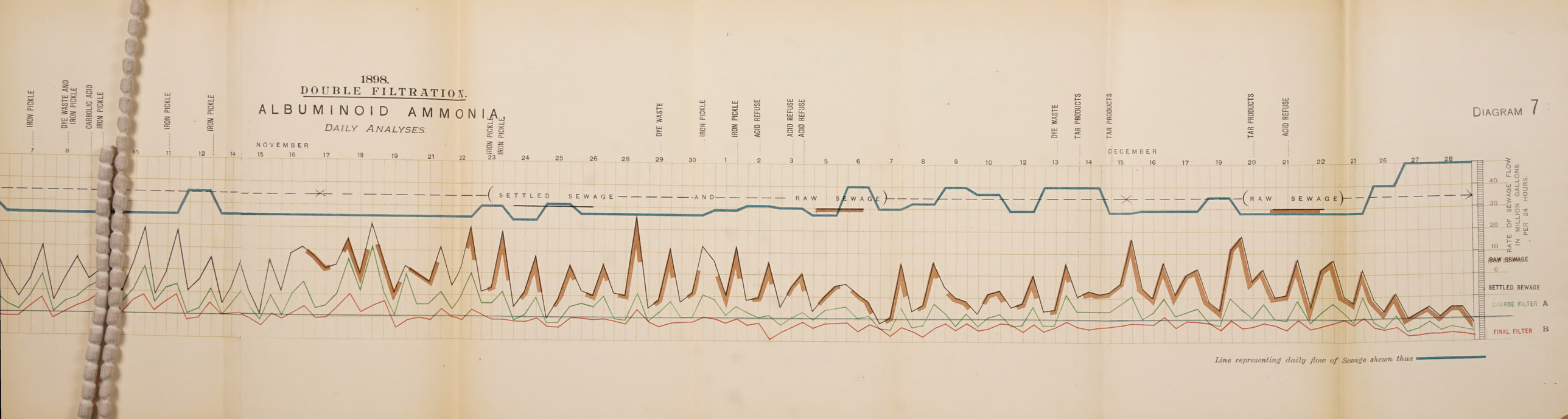
1898.

DOUBLE FILTRATION.

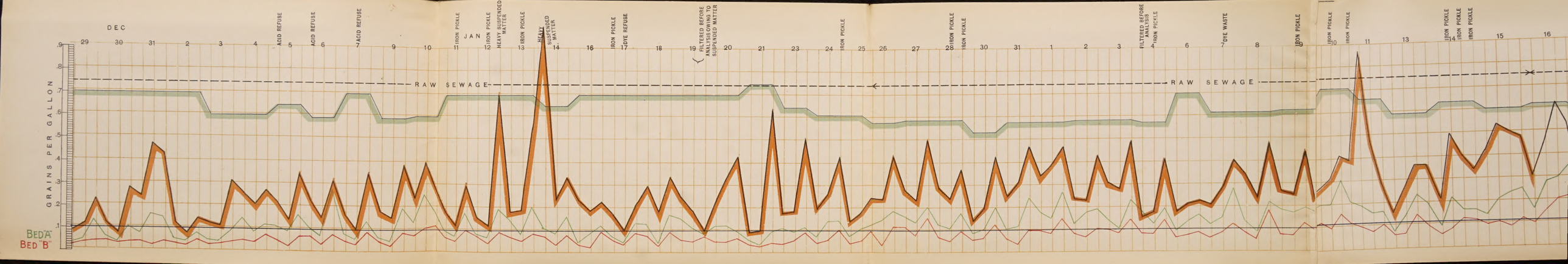
ALBUMINOID AMMONIA.

DAILY ANALYSES.

DIAGRAM 7



Line representing daily flow of Sewage shewn thus ——


DEC
JAN
29 30 31 2 3 4 5 6 7 9 10 11 13 14 16 17 18 19 20 21 23 24 25 26 27 28 30 31 1 2 3 4 6 7 8 9 10 11 13 14 15 16
ACID REFUSE
ACID REFUSE
ACID REFUSE
IRON PICKLE
IRON PICKLE
HEAVY SUSPENDED MATTER
IRON PICKLE
HEAVY SUSPENDED MATTER
IRON PICKLE
DYE REFUSE
FILTERED BEFORE ANALYSIS OWING TO SUSPENDED MATTER
IRON PICKLE
IRON PICKLE
IRON PICKLE
FILTERED BEFORE ANALYSIS
IRON PICKLE
DYE WASTE
IRON PICKLE
IRON PICKLE
IRON PICKLE
IRON PICKLE
IRON PICKLE
RAW SEWAGE
RAW SEWAGE
GRAINS PER GALLON
.9
.8
.7
.6
.5
.4
.3
.2
.1
BED "A"
BED "B"

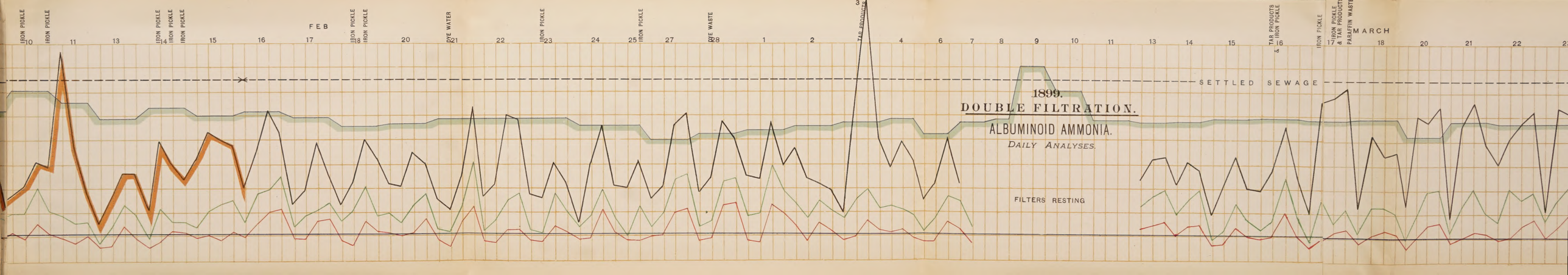

IRON PICKLE
IRON PICKLE
IRON PICKLE
IRON PICKLE
IRON PICKLE
DYE WATER
IRON PICKLE
IRON PICKLE
DYE WASTE
TAR PRODUCTS
TAR PRODUCTS & IRON PICKLE
IRON PICKLE
IRON PICKLE & TAR PRODUCTS
PARAFFIN WASTE
FEB
MARCH
10 11 13 14 15 16 17 20 21 22 23 24 25 27 28 1 2 3 4 6 7 8 9 10 11 13 14 15 16 17 18 20 21 22
SETTLED SEWAGE
1899.
DOUBLE FILTRATION.
ALBUMINOID AMMONIA.
DAILY ANALYSES.
FILTERS RESTING

DIAGRAM 8

1899.

DOUBLE FILTRATION.

ALBUMINOID AMMONIA.

DAILY ANALYSES.

FILTERS RESTING

SETTLED SEWAGE

MARCH

APRIL

TAR PRODUCTS & IRON PICKLE

IRON PICKLE

IRON PICKLE & TAR PRODUCTS & PARAFFIN WAST

TAR PRODUCTS

IRON PICKLE

TAR PRODUCTS

TAR PRODUCTS

IRON PICKLE

6 7 8 9 10 11 13 14 15 16 17 18 20 21 22 23 24 25 27 28 29 30 31 1 3 4 5 6 7 8 10 11 12

RATE OF SEWAGE FLOW IN MILLION GALLONS PER 24 HOURS.

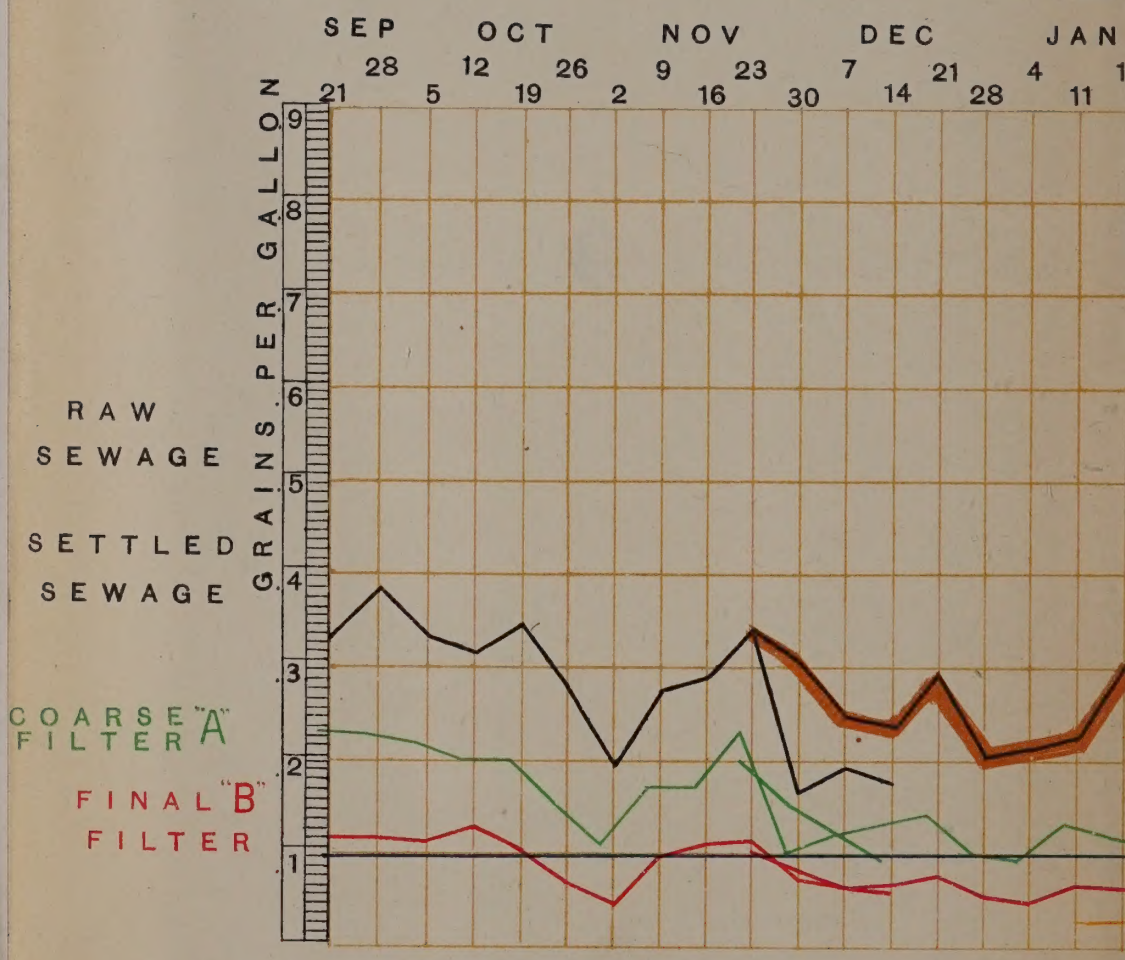
40 30 20 10 0

Line representing Daily Flow of Sewage shewn thus

DOUBLE

WEEKLY

ALBUMIN



399.

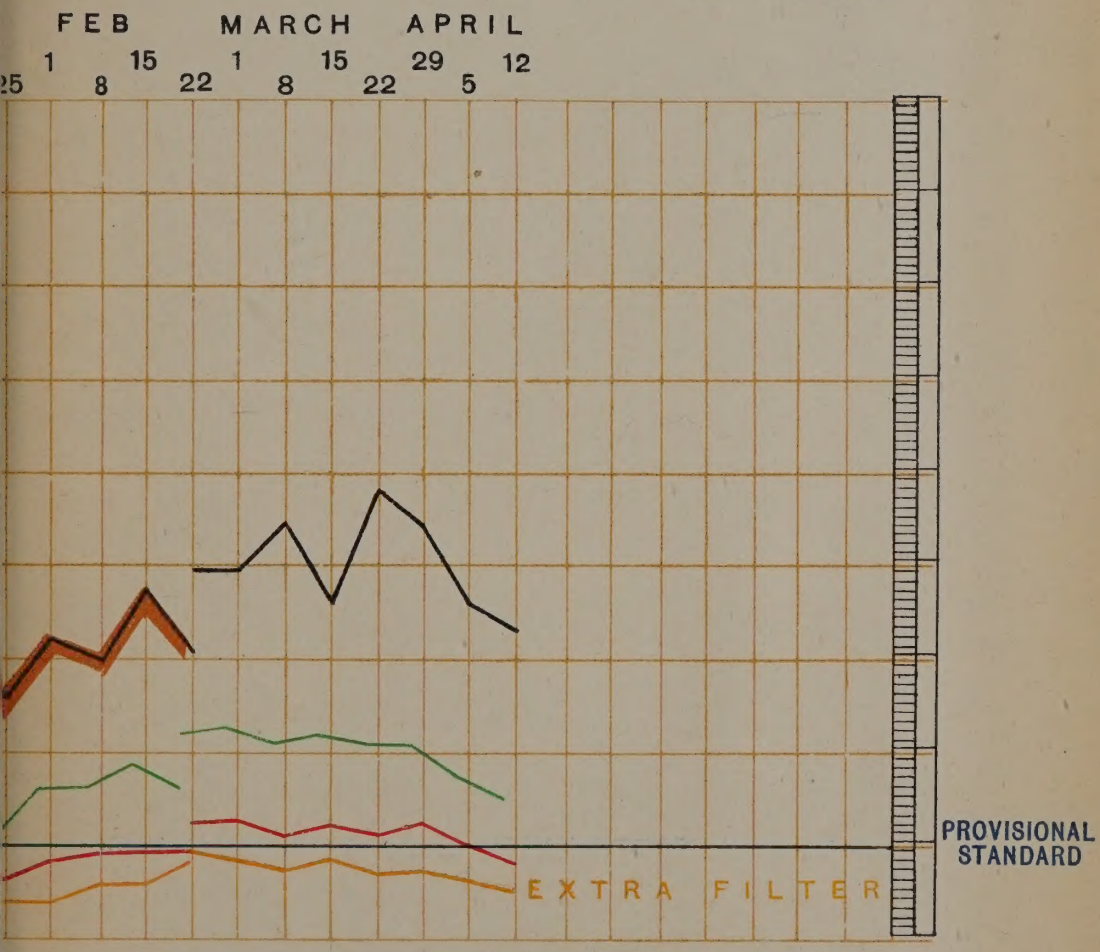
ILTRATION.

VERAGES OF

ID AMMONIA.

ENDING

DIAGRAM 9



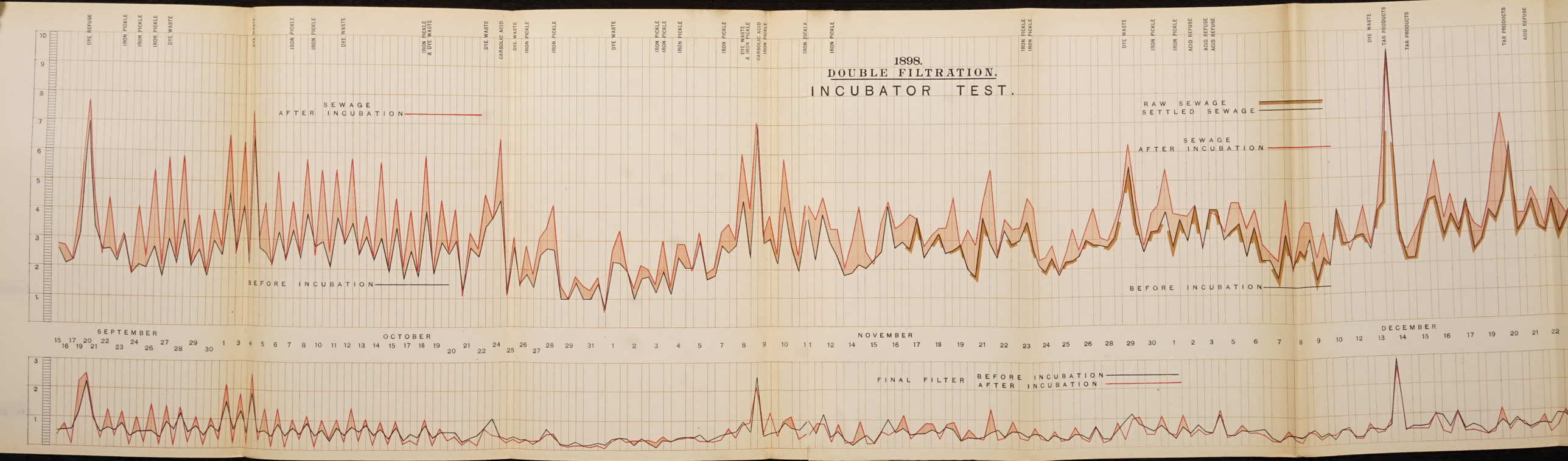

1898.
DOUBLE FILTRATION.
INCUBATOR TEST.
RAW SEWAGE
SETTLED SEWAGE
SEWAGE AFTER INCUBATION
BEFORE INCUBATION
SEWAGE AFTER INCUBATION
BEFORE INCUBATION
FINAL FILTER BEFORE INCUBATION
AFTER INCUBATION
DYE REFUSE
IRON PICKLE
DYE WASTE
IRON PICKLE & DYE WASTE
CARBOLIC ACID
ACID REFUSE
TAR PRODUCTS
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER

DIAGRAM 10

1898.

DOUBLE FILTRATION.

INCUBATOR TEST.

IRON PICKLE
IRON PICKLE
IRON PICKLE
IRON PICKLE
DYE WASTE
IRON PICKLE
IRON PICKLE
ACID REFUSE
ACID REFUSE
ACID REFUSE
DYE WASTE
TAR PRODUCTS
TAR PRODUCTS
TAR PRODUCTS
ACID REFUSE

RAW SEWAGE
SETTLED SEWAGE

SEWAGE
AFTER INCUBATION

BEFORE INCUBATION

10 9 8 7 6 5 4 3 2 1

NOVEMBER

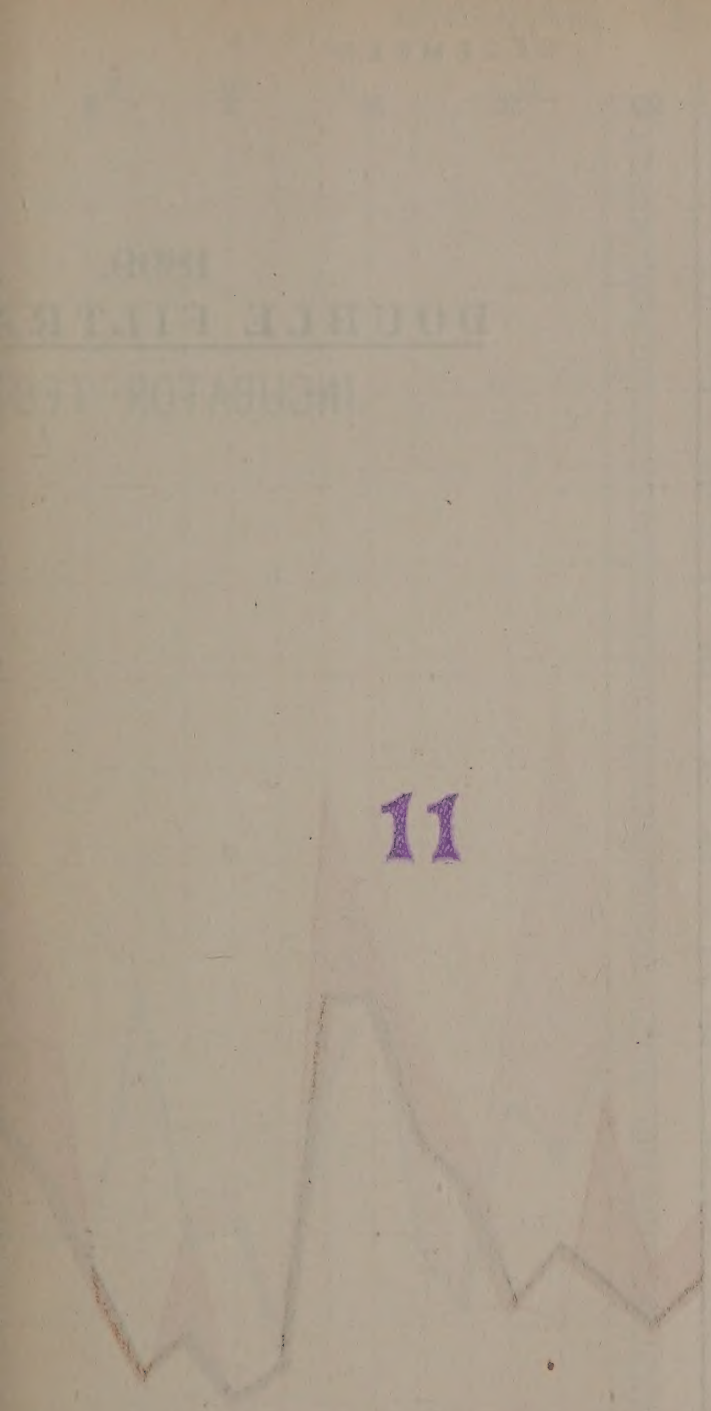
10 11 12 14 15 16 17 18 19 21 22 23 24 25 26 28 29 30

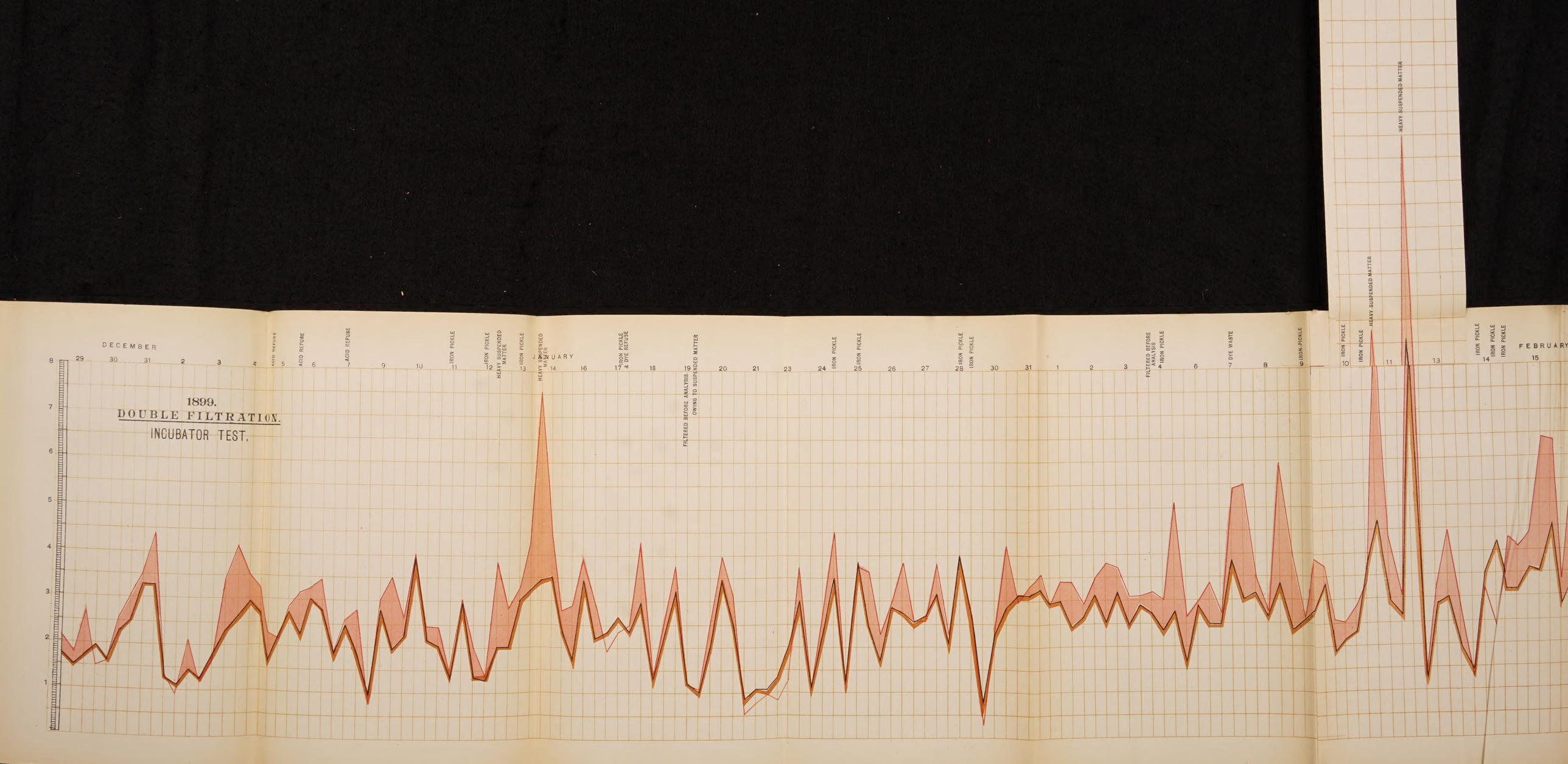
DECEMBER

1 2 3 5 6 7 8 9 10 12 13 14 15 16 17 19 20 21 22 23 26 27 28

FINAL FILTER BEFORE INCUBATION
AFTER INCUBATION

3 2 1




1899.
DOUBLE FILTRATION.
INCUBATOR TEST.
DECEMBER
29 30 31 2 3 4 5 6 9 10 11 12 13 14 16 17 18 19 20 21 23 24 25 26 27 28 30 31 1 2 3 4 6 8 9 10 11 13 14 15
ACID REFUSE
IRON PICKLE
HEAVY SUSPENDED MATTER
FILTERED BEFORE ANALYSIS OWING TO SUSPENDED MATTER
IRON PICKLE & DYE REFUSE
DYE WASTE
FEBRUARY
1 2 3 4 5 6 7 8

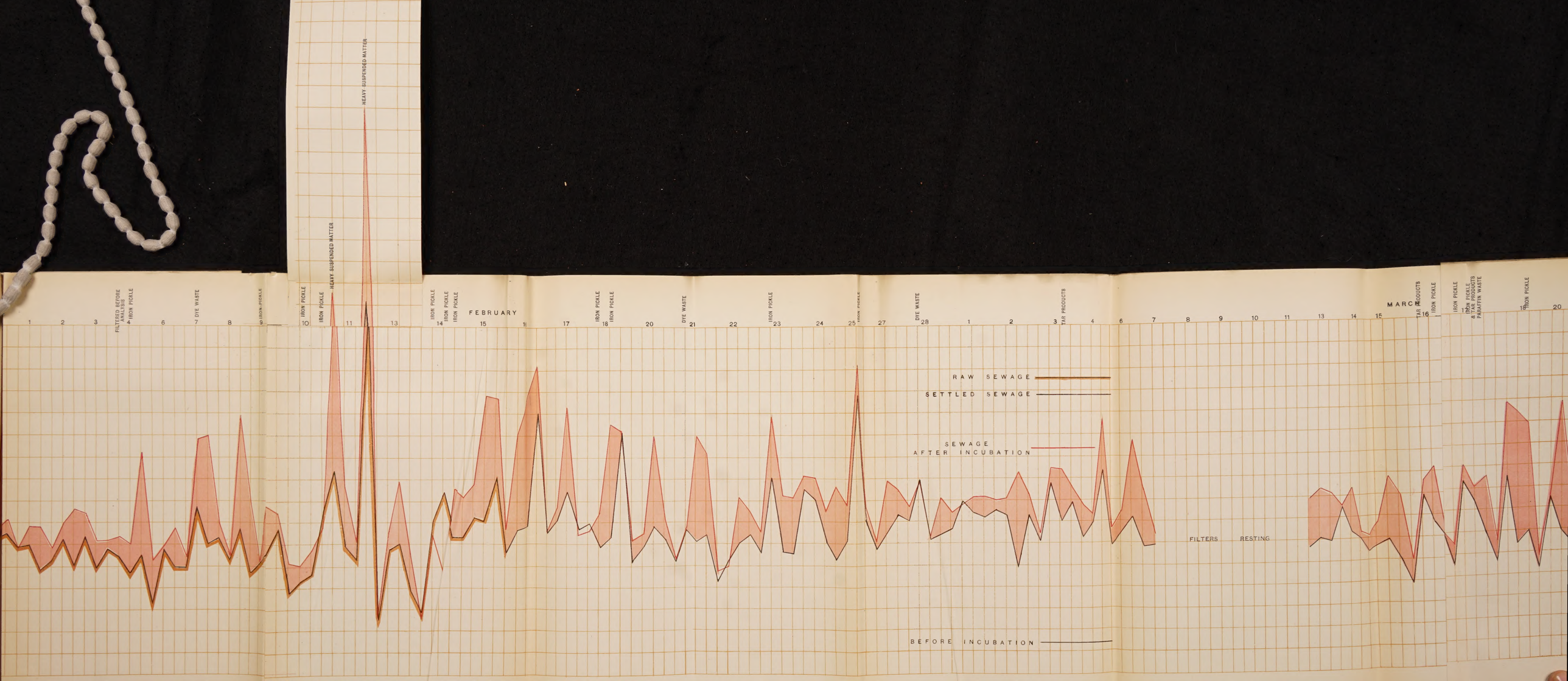
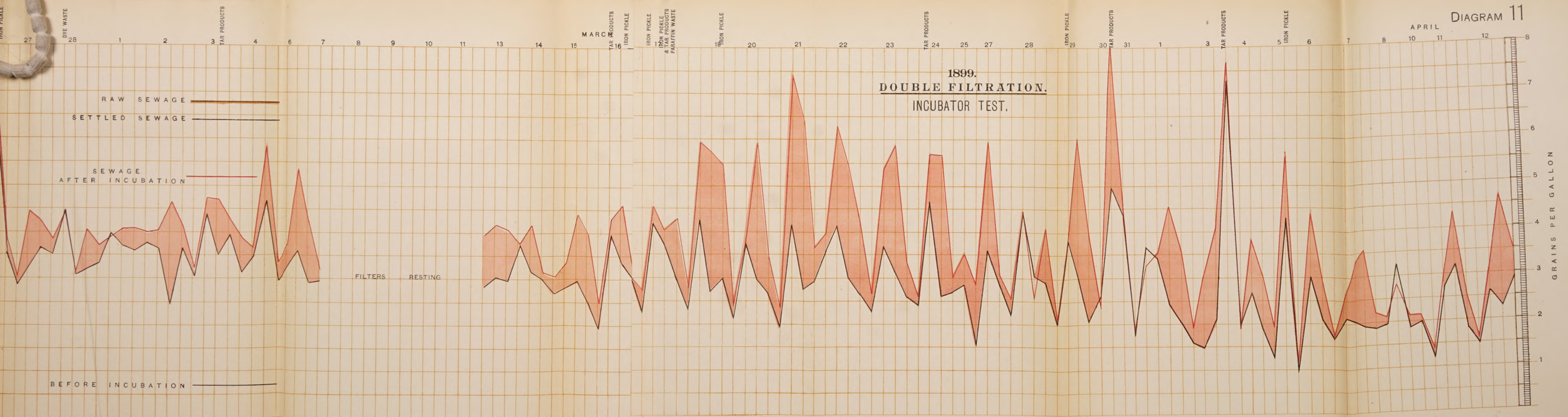

FILTERED BEFORE ANALYSIS
IRON PICKLE
DYE WASTE
IRON PICKLE
HEAVY SUSPENDED MATTER
IRON PICKLE
IRON PICKLE
IRON PICKLE
IRON PICKLE
FEBRUARY
IRON PICKLE
IRON PICKLE
DYE WASTE
IRON PICKLE
IRON PICKLE
DYE WASTE
TAR PRODUCTS
TAR PRODUCTS
IRON PICKLE
MARCH
IRON PICKLE
IRON PICKLE & TAR PRODUCTS
PARAFFIN WASTE
IRON PICKLE
RAW SEWAGE
SETTLED SEWAGE
SEWAGE AFTER INCUBATION
BEFORE INCUBATION
FILTERS RESTING

DIAGRAM 11

1899.

DOUBLE FILTRATION.

INCUBATOR TEST.


IRON PICKLE
DYE WASTE
TAR PRODUCTS
IRON PICKLE
IRON PICKLE & TAR PRODUCTS & PARAFFIN WASTE
TAR PRODUCTS
IRON PICKLE
TAR PRODUCTS
IRON PICKLE
TAR PRODUCTS
IRON PICKLE
MARCH
APRIL
27 28 1 2 3 4 6 7 8 9 10 11 13 14 15 16 17 18 20 21 22 23 24 25 27 28 29 30 31 1 3 4 5 6 7 8 10 11 12
RAW SEWAGE
SETTLED SEWAGE
SEWAGE AFTER INCUBATION
BEFORE INCUBATION
FILTERS RESTING
GRAINS PER GALLON
1 2 3 4 5 6 7 8

1899.

DOUBLE FILTRATION.

INCUBATOR TEST.

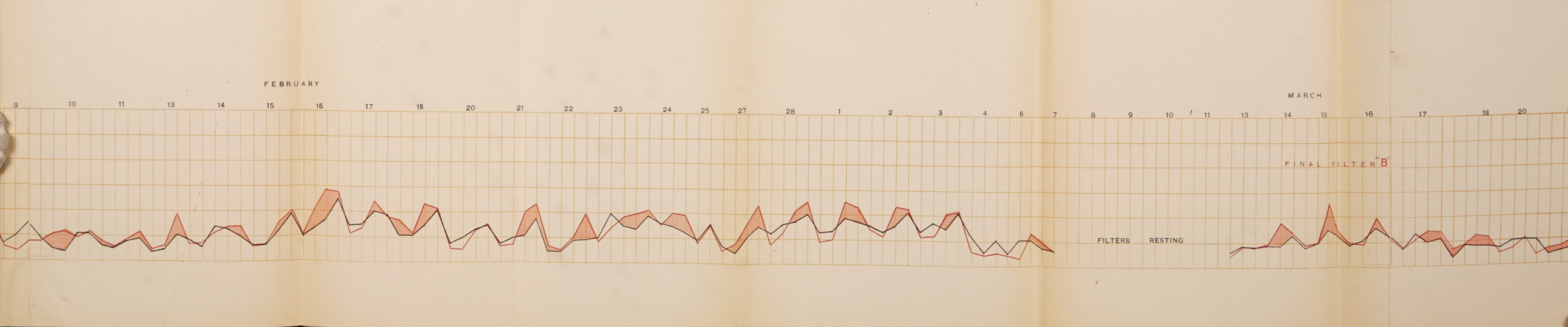

FEBRUARY
9
10
11
13
14
15
16
17
18
20
21
22
23
24
25
27
28
1
2
3
4
6
7
8
9
10
11
13
14
15
16
17
18
20
MARCH
FINAL FILTER "B"
FILTERS RESTING

DIAGRAM 12

MARCH
APRIL
28 1 2 3 4 6 7 8 9 10 11 13 14 15 16 17 18 20 21 22 23 24 25 27 28 29 30 31 1 3 4 5 6 7 8 10 11 12
FINAL FILTER "B"
BEFORE INCUBATION
AFTER INCUBATION
FILTERS RESTING
GRAINS PER GALLON
1
2
3

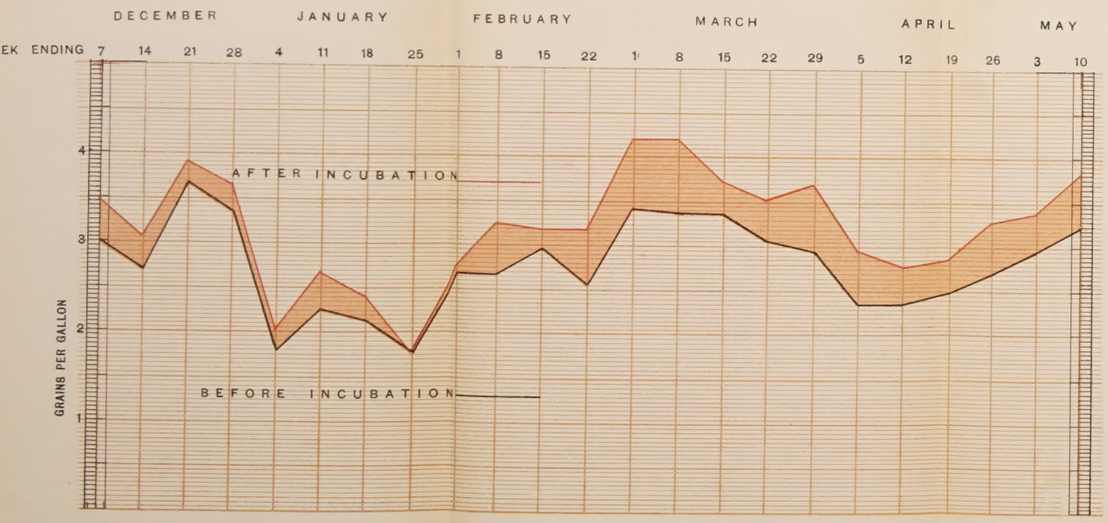
1899.

SEPTIC SYSTEM.

INCUBATOR TEST.

3 MINUTES OXYGEN ABSORBED.

SEPTIC TANK EFFLUENT.

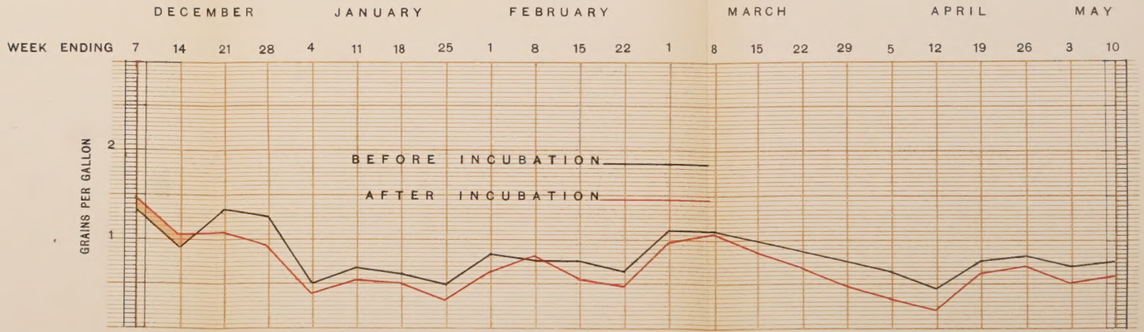


INCUBATOR TEST.

3 MINUTES OXYGEN ABSORBED.

AVERAGE FILTER EFFLUENT.

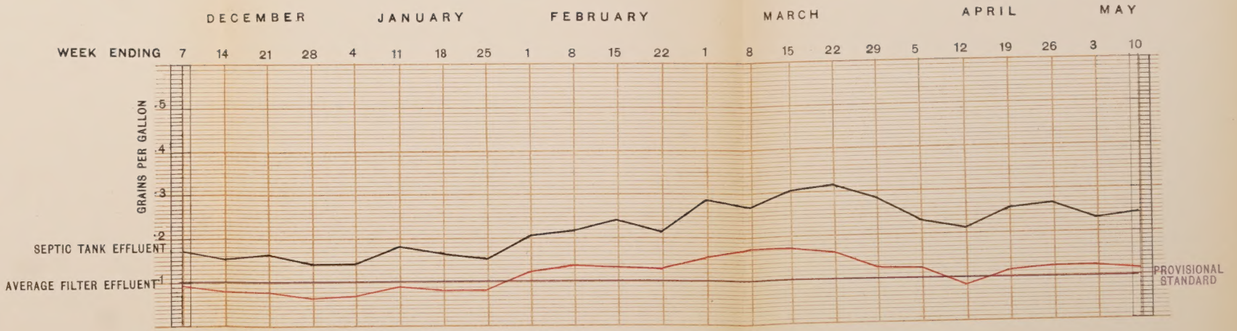
DIAGRAM 13



OXYGEN ABSORBED, 4 HOURS

ALBUMINOID AMMONIA.

DIAGRAM 14



15

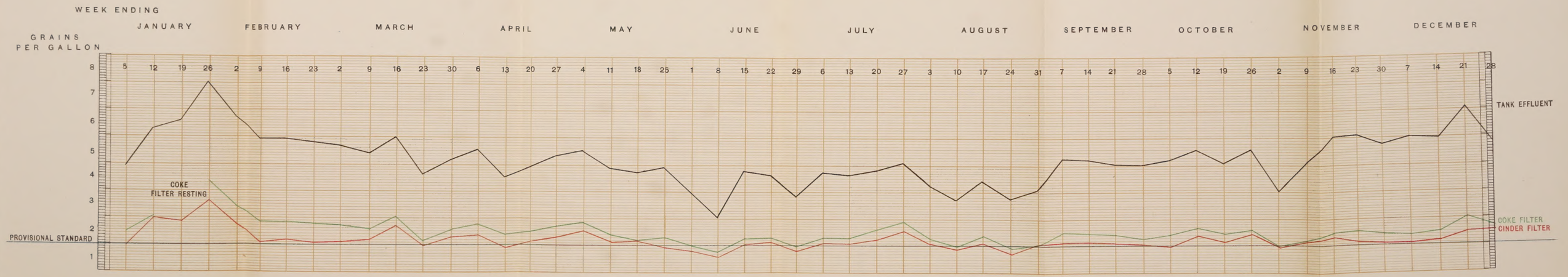
1898.

SINGLE FILTRATION.

OXYGEN ABSORBED, 4 HOURS.

Weekly Averages of Daily Analyses.

DIAGRAM 15



16

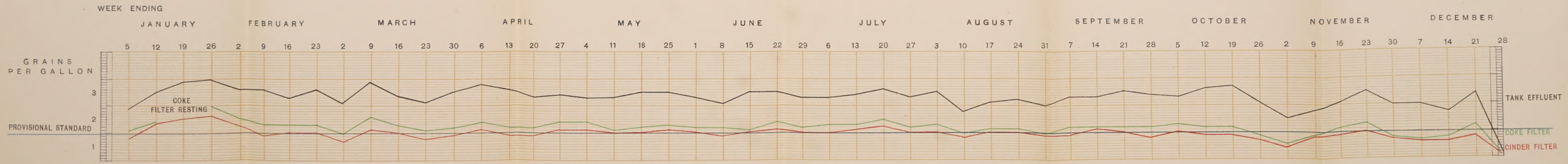
DIAGRAM 16

1898.

SINGLE FILTRATION.

ALBUMINOID AMMONIA.

WEEKLY AVERAGES OF DAILY ANALYSES.



17

INCUBATO

WEEK ENDING
JANUARY
FEBRUARY
MARCH
APRIL
5 12 19 26 2 9 16 23 2 9 16 23 30 6 13 20 27 4
GRAINS PER GALLON
4
3
2
1
GRAINS PER GALLON
2
1
Filter
Resting
GRAINS PER GALLON
1

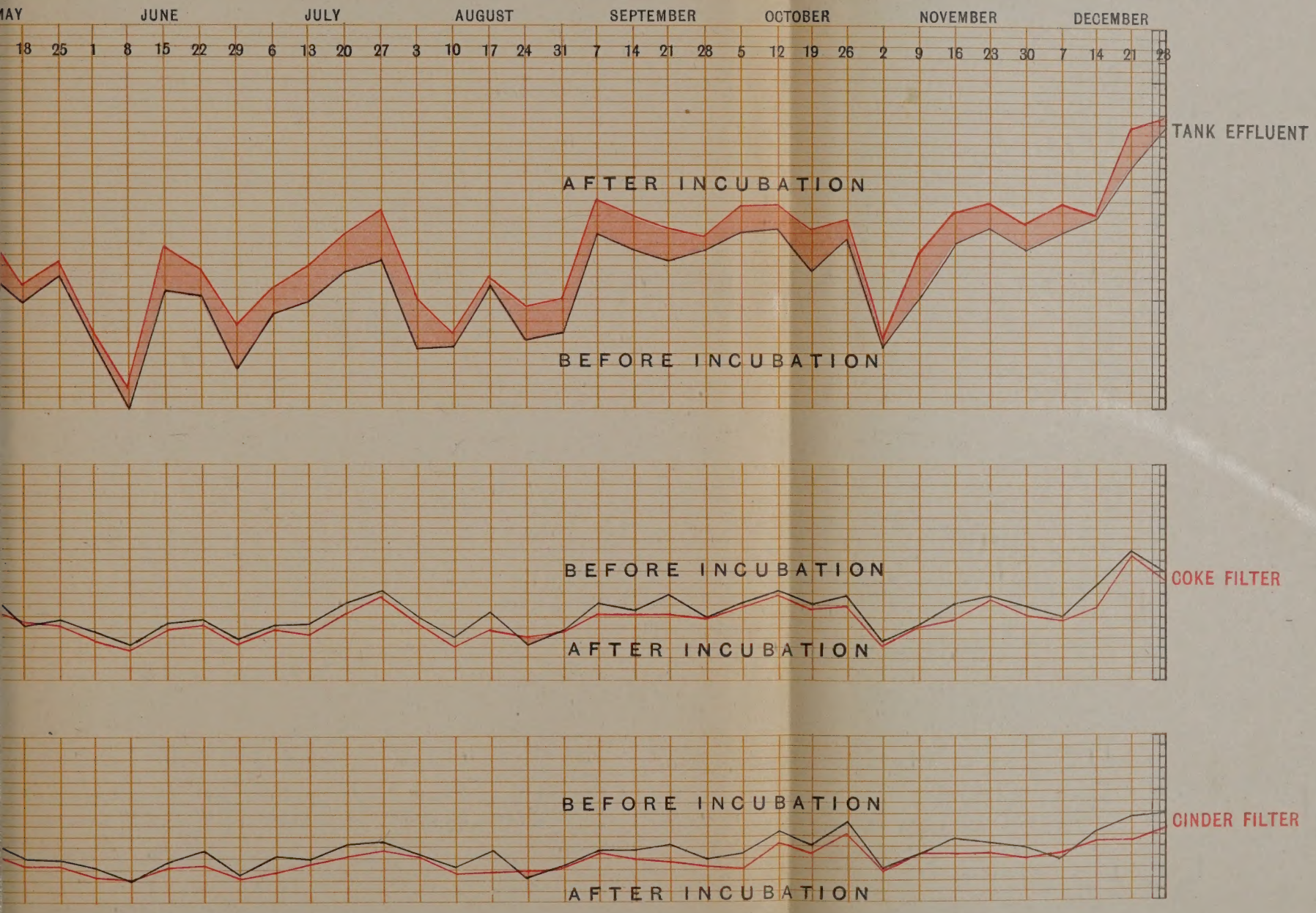
1898.

SINGLE FILTRATION.

DIAGRAM 17

TEST—OXYGEN ABSORBED, 3 MINUTES.

Weekly Averages of Daily Tests:--



18

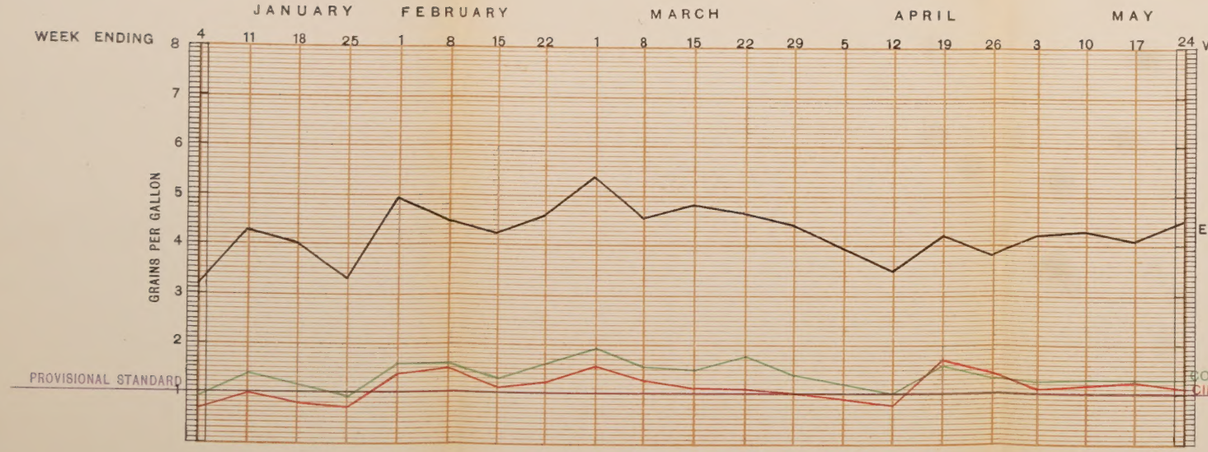
1899.

SINGLE FILTRATION.

(ROSCOE FILTERS.)

Weekly Averages of Daily Analyses.

OXYGEN ABSORBED, 4 HOURS



ALBUMINOID AMMONIA.

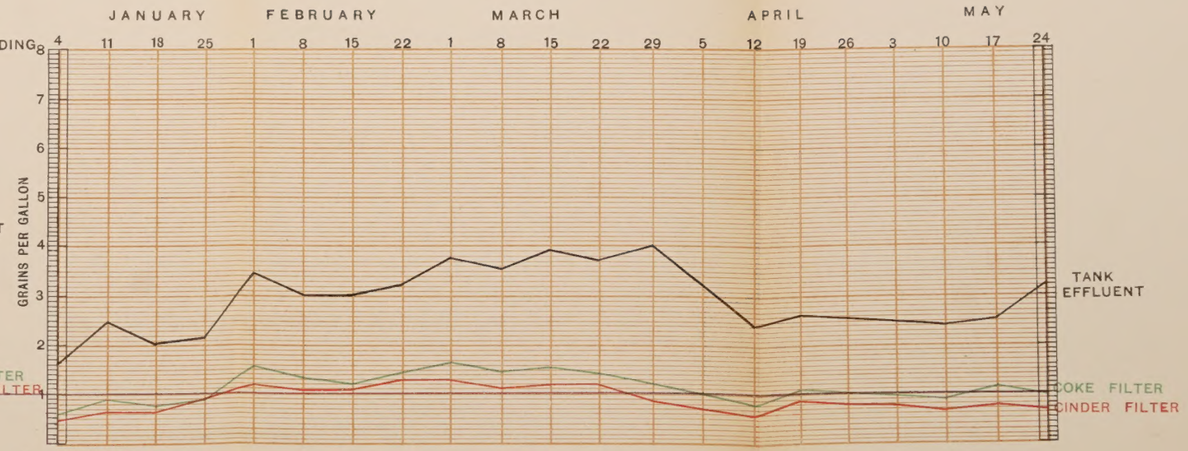


DIAGRAM 18

1899.

SINGLE FILTRAT

(ROSCOE FILTERS.)

INCUBATOR TEST. OXYGEN ABSOR

Weekly Averages of Dai

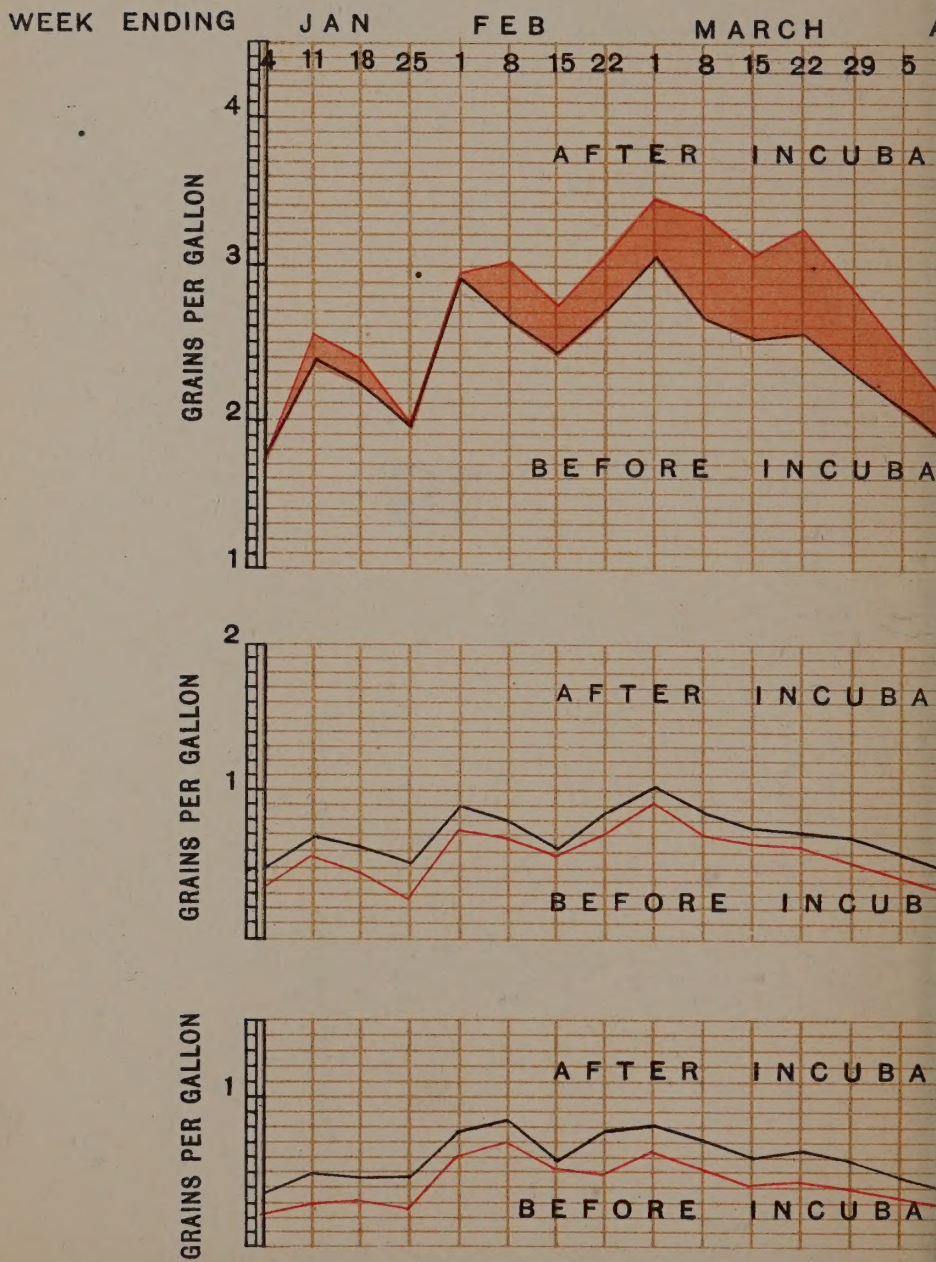
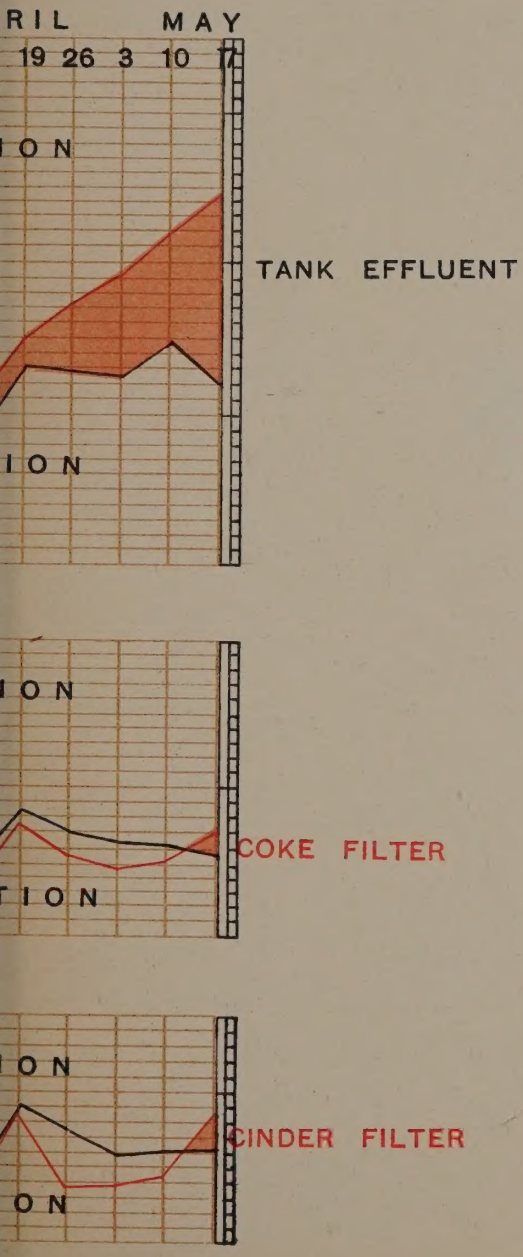


DIAGRAM 19

ON.

ED, 3 MINUTES.

TESTS.



20

STORM,

Light Rain fell 8-30 a.m. to 10 a.m. He

Last Day

Samples of Sewage ta

Total

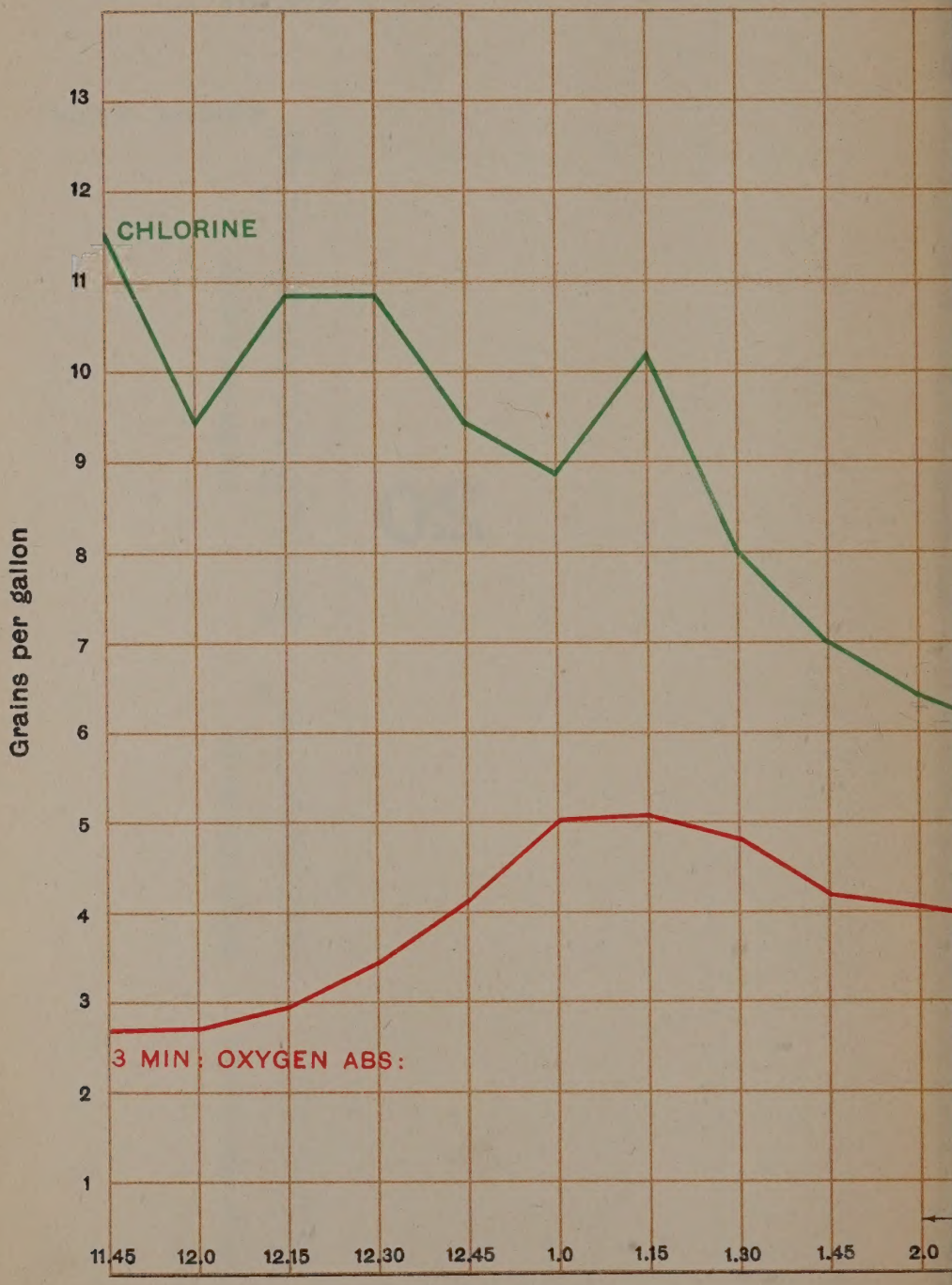


DIAGRAM 20

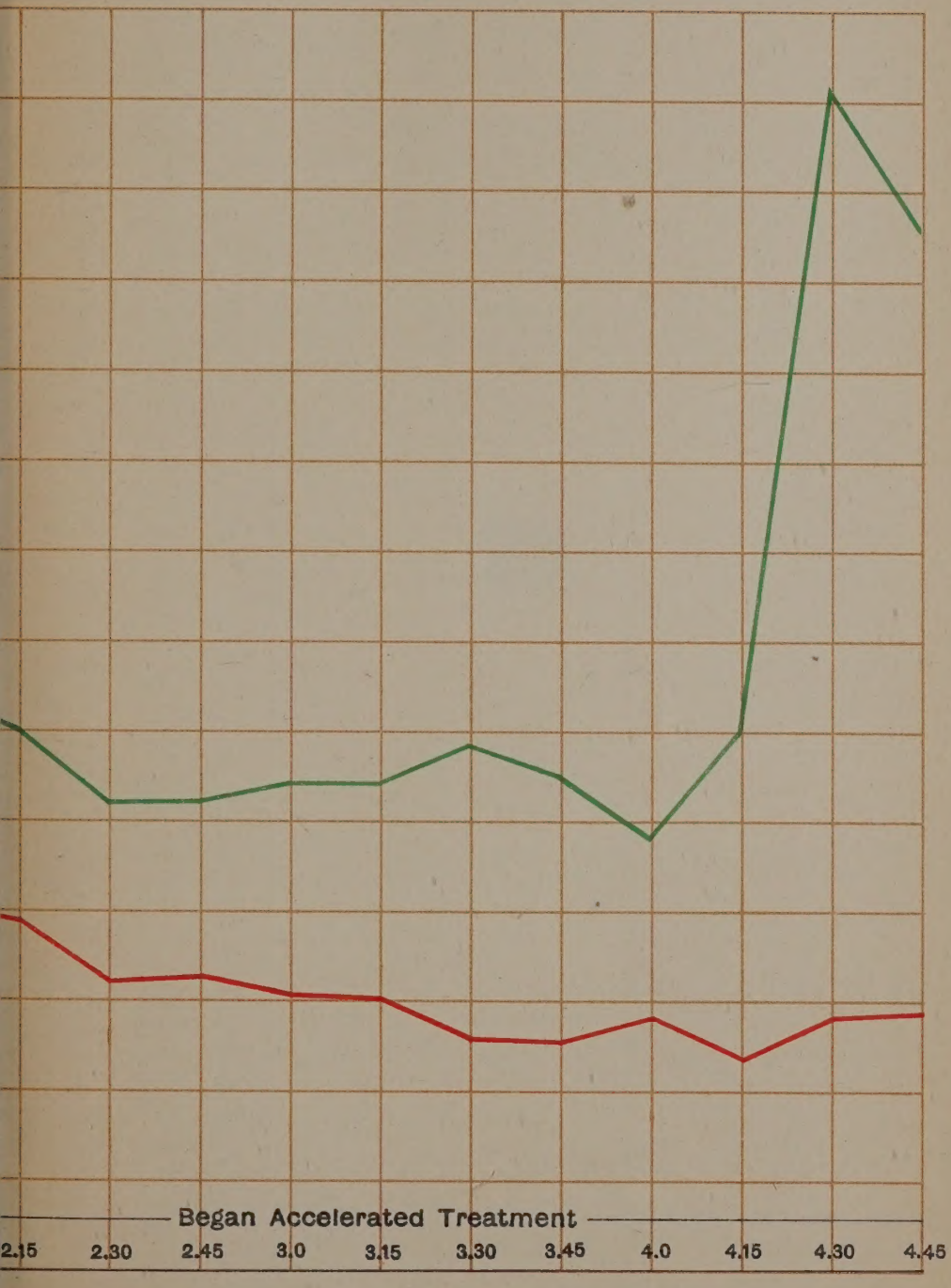
Iay, 9th, 1899.

y Rain fell 10-30 a.m. to 11-30 a.m. in the City.

f Rain, May 1st.

en at Intervals of 15 Minutes.

ainfall = ·26.



21

1899.

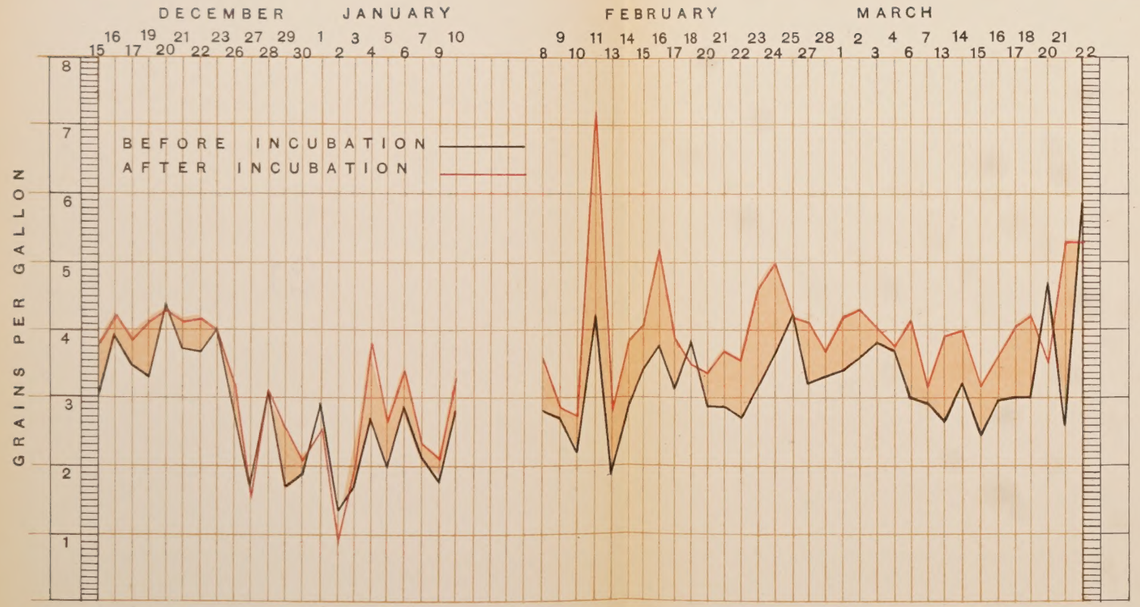
DOUBLE FILTRATION.

INCUBATOR TEST. OXYGEN ABSORBED, 3 MINUTES.

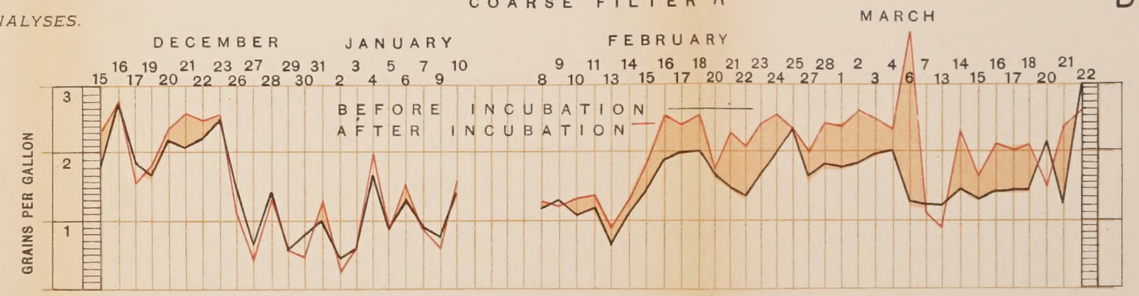
Daily Analyses.

DIAGRAM 21

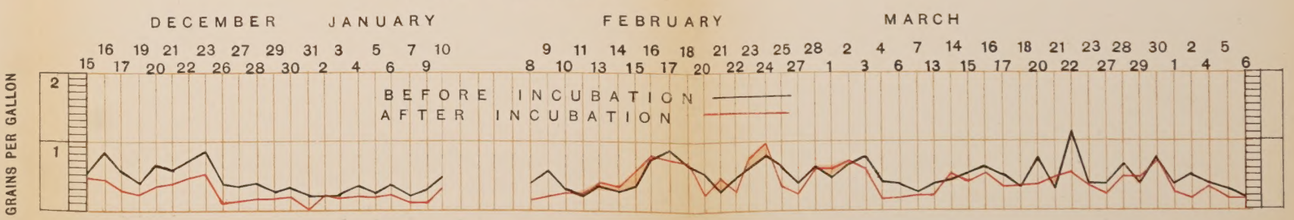
RAW SEWAGE



COARSE FILTER "A"

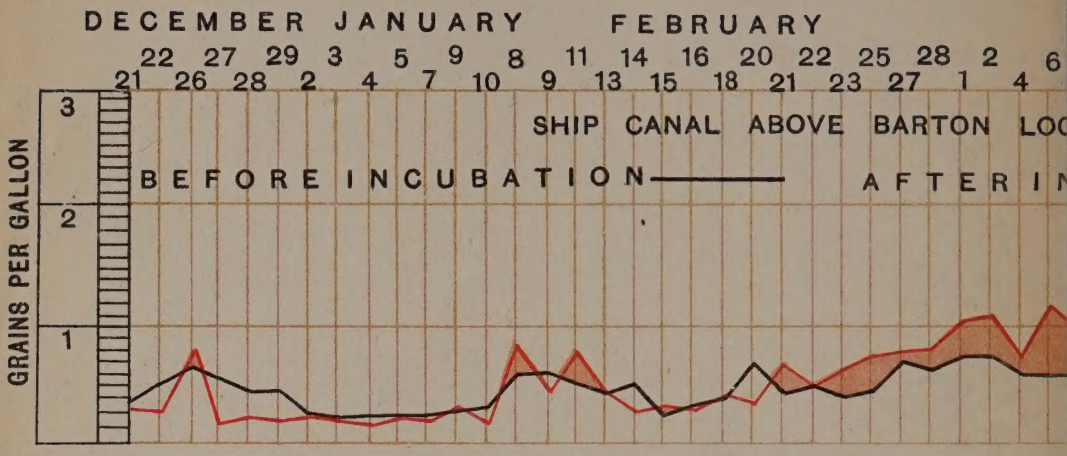


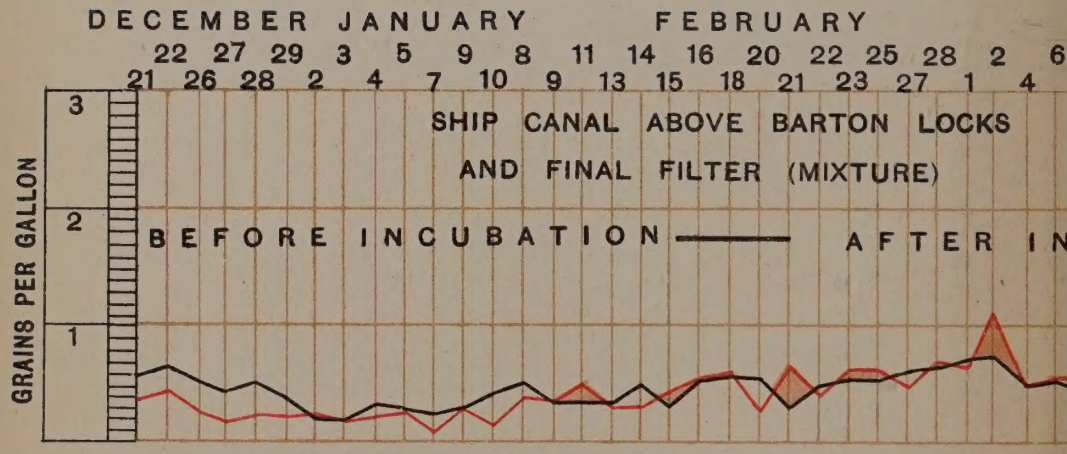
FINAL FILTER "B"



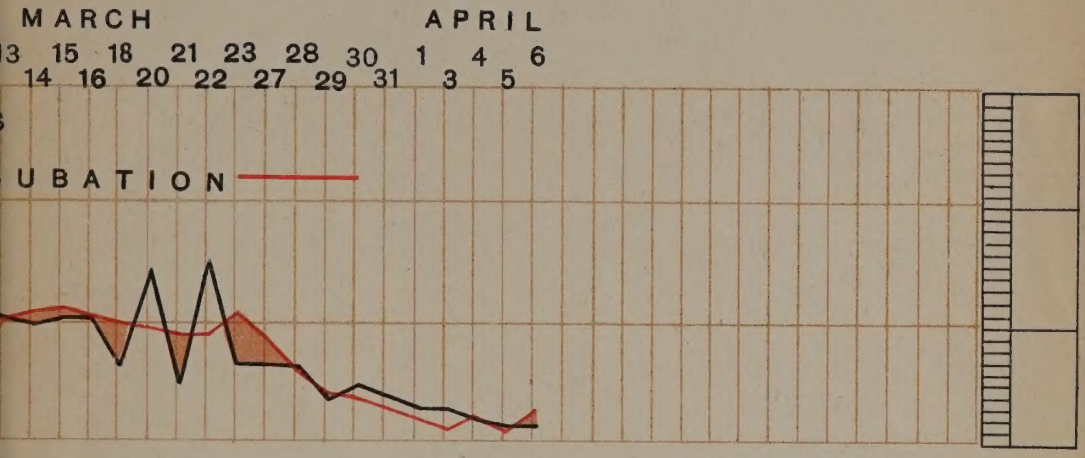
22

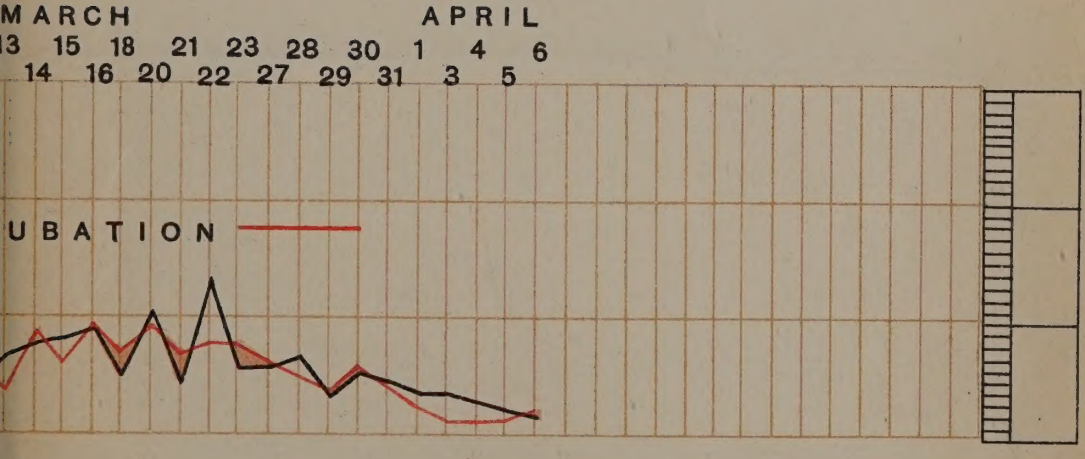
INCUBATOR TEST. OXYGEN A

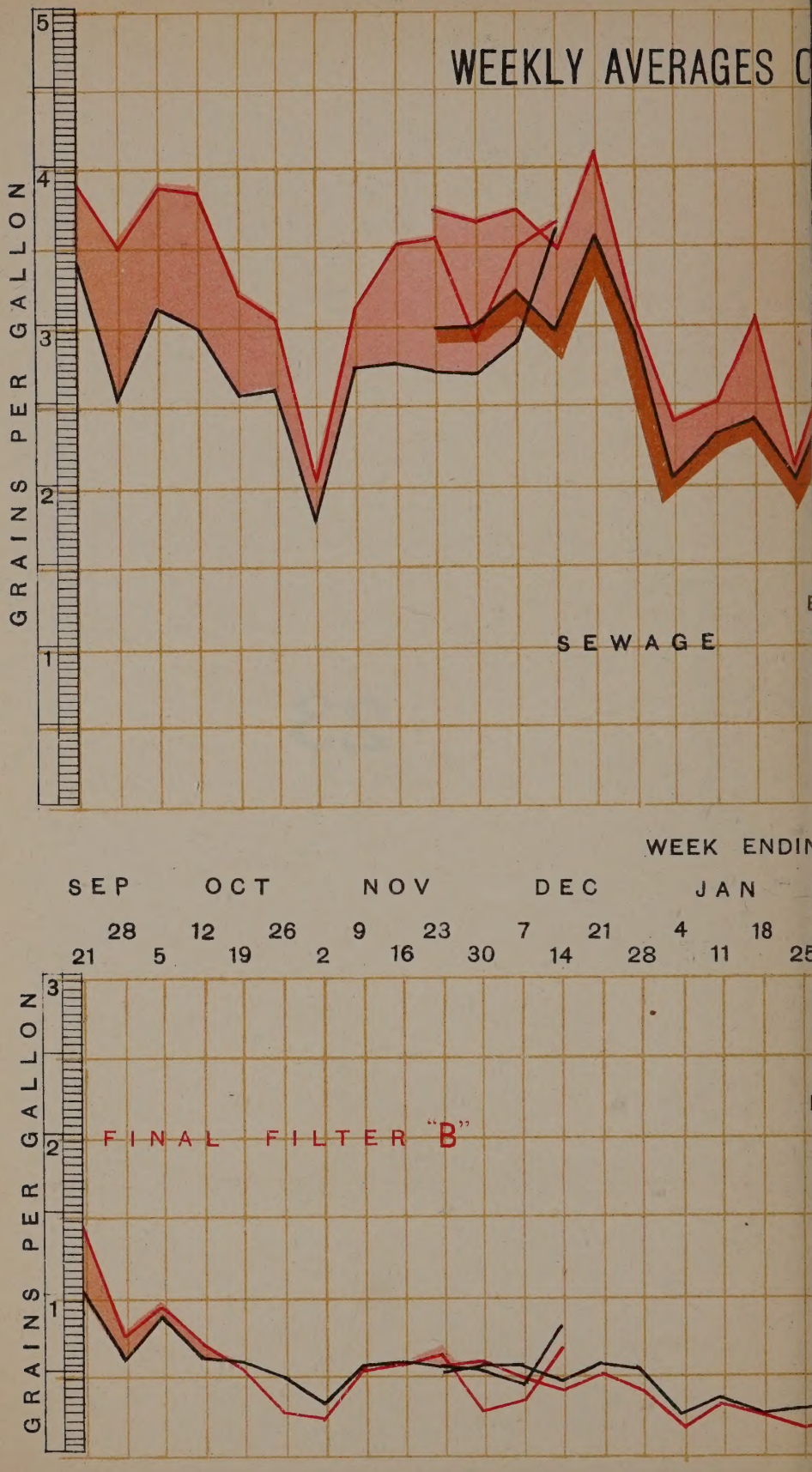

DECEMBER JANUARY FEBRUARY
22 27 29 3 5 9 8 11 14 16 20 22 25 28 2 6
21 26 28 2 4 7 10 9 13 15 18 21 23 27 1 4
3
2
1
GRAINS PER GALLON
SHIP CANAL ABOVE BARTON LOC
BEFORE INCUBATION
AFTER I


DECEMBER JANUARY FEBRUARY
22 27 29 3 5 9 8 11 14 16 20 22 25 28 2 6
21 26 28 2 4 7 10 9 13 15 18 21 23 27 1 4
3
2
1
GRAINS PER GALLON
SHIP CANAL ABOVE BARTON LOCKS
AND FINAL FILTER (MIXTURE)
BEFORE INCUBATION
AFTER I

SORBED, 3 MINUTES.






WEEKLY AVERAGES O
GRAINS PER GALLON
5
4
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SEWAGE
WEEK ENDIN
SEP
OCT
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JAN
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16
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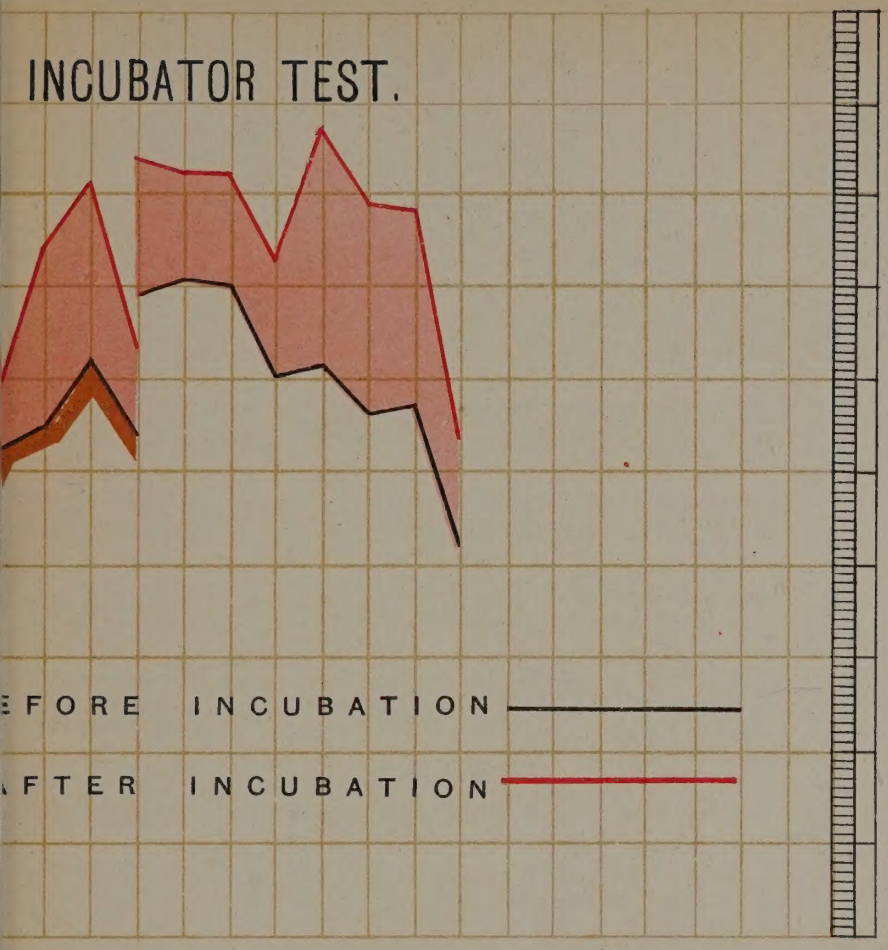
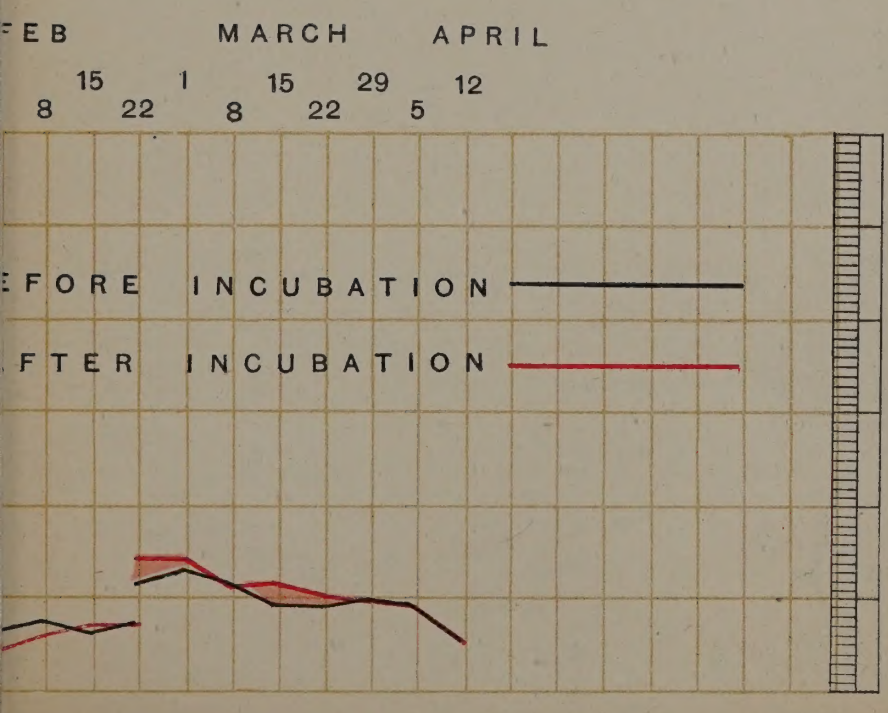
14
28
11
25
GRAINS PER GALLON
3
2
1
FINAL FILTER "B"


INCUBATOR TEST.
EFORE INCUBATION
FTER INCUBATION


FEB
MARCH
APRIL
8
15
22
1
8
15
22
29
5
12
EFORE INCUBATION
FTER INCUBATION

WELLCOME
LIBRARY
INSTITUTE